# PROPERTY CONDITION ASSESSMENT
# OF
# WORLD TRADE CENTER PORTFOLIO

## RETAIL MALL AND PLAZA

**Located In**

## NEW YORK, NEW YORK

**Prepared For**

**THE PORT AUTHORITY OF NY & NJ**
**WORLD TRADE CENTER COMPLEX**
**NEW YORK, NEW YORK 10048**

**Prepared By**

MERRITT & HARRIS, INC.
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FINAL DRAFT

Property #3
Merritt & Harris, Inc. Project Number 20-251E

CD File SK012051

20-251E

December 6, 2000

Mr. Jeffrey S. Green
General Counsel
The Port Authority of NY & NJ
1 World Trade Center
New York, New York 10048

**Re: Due Diligence Physical Condition Survey**
**World Trade Center**
**New York, New York**

Dear Mr. Green:

Enclosed are 7 copies of our report of the conditions observed during our site visits to the referenced property between September 13 and October 31, 2000. For this report, I served as the Project Coordinator, with Peter J. Brady, P.E., as Project Manager and Structural Engineer, and Jack M. Kagan and Joseph Marciano, P.E., as Mechanical/Electrical Engineers.

As previously agreed, Merritt & Harris, Inc. has divided the report into 7 segments as follows:

1. One World Trade Center (Tower A)
2. Two World Trade Center (Tower B)
3. Retail Mall and Plaza
4. Four World Trade Center (Southeast Plaza Building)
5. Five World Trade Center (Northeast Plaza Building)
6. Central Services
7. Subgrade

For convenience, identical copies of Sections I - IV (I - Identification, II - Objective, III - Procedures and Limitations, and IV - Executive Summary) have been included with each report so they can stand independently, if required to do so.

Thank you for selecting Merritt & Harris, Inc. as your consultant on this project. If you have any questions, please call me.

Very truly yours,

**MERRITT & HARRIS, INC.**

Robert G. Weiland, R.A.
Vice President & Principal

RGW:rw
Enclosure

cc: Thomas C. Richard
Peter Brady
Jack Kagan
Joseph Marciano

# REPORT OF
# DUE DILIGENCE PHYSICAL CONDITION SURVEY
# WORLD TRADE CENTER

Located At

**WORLD TRADE CENTER COMPLEX**
**NEW YORK, NEW YORK**

Prepared For

**THE PORT AUTHORITY OF NEW YORK AND NEW JERSEY**
1 WORLD TRADE CENTER
NEW YORK, NEW YORK 10048

Prepared By

**MERRITT & HARRIS, INC.**
110 EAST 42ND STREET - SUITE 1200
NEW YORK, NEW YORK 10017-5685

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3. Retail Mall and Plaza
4. Four World Trade Center (Southeast Plaza Building)
5. Five World Trade Center (Northeast Plaza Building)
6. Central Services
7. Subgrade

## SECTION I - IDENTIFICATION

**Project Name:** World Trade Center

**Location:** One - Five World Trade Center
New York, New York 10048

**Report Prepared For:** Mr. Jeffrey S. Green, General Counsel
The Port Authority of NY & NJ
1 World Trade Center
New York, New York 10048

**Site Visits and Report By:** Thomas C. Richard, AIA
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Merritt & Harris, Inc.

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*Project Coordinator*
Merritt & Harris, Inc.

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*Elevator Field Engineer*
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Wayne Crandlemere
*Environmental Consultant*
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**Port Authority Personnel Present During Visits:**

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**Dates of Site Visits:** September 13 - October 31, 2000

## SECTION II - OBJECTIVE

The purpose of the on-site evaluation and document review is to assess the general physical condition of the property as it currently exists. This report provides a narrative and photographic description of the buildings, as well as a listing of any deficiencies that were noted during our site visit.

The report has been divided as follows into seven component sections for ease of handling:

1. One World Trade Center (Tower A)
2. Two World Trade Center (Tower B)
3. Retail Mall and Plaza
4. Four World Trade Center (Southeast Plaza Building)
5. Five World Trade Center (Northeast Plaza Building)
6. Central Services
7. Subgrade

Each of the volumes contains descriptions of the component, recommendations for items requiring action, and photographs and supporting documentation specific to each component of the project. An overall Executive Summary, identical for all volumes, has been reproduced and included in each of the volumes for convenience. Shared site feature and service elements are described and discussed within the Executive Summary section. Due to the nature of the project, some of the construction elements may be shared or physically interconnected among 2 or more of the project components. As a result there may be some redundancy noted in the report in order to indicate the support of 2 or more project components by these systems.

The Recommendations section for each volume is a listing of items that will require action within the next 10-year period. **Immediate (0-1 Year)** issues are deficiencies which are in violation of codes, which pose a danger to public safety, or which, if left uncorrected, will lead to further deterioration of the property or significantly impact marketability or habitability. Issues that will require addressing during the second to the tenth years are divided into 2 categories, **Future (1-5 Years)** and **Future (6-10 Years)**. These categories represent work not required by agencies or codes, but which, in our opinion, are issues that should be attended to in the context of the prudent management of the property.

ADA compliance work is considered to be mandatory and is listed separately.

## SECTION III - PROCEDURES AND LIMITATIONS

To adequately determine the present conditions at the World Trade Center (WTC), Merritt & Harris, Inc. performed on-site observations between September 13 and October 31, 2000. Mr. Leandro Zucchi, Assistant General Manager, Building Services Management of the Port Authority, acted as the Project Coordinator, arranging security clearances, providing knowledgeable escorts for the various components of the project, and facilitating review of available documentation. Over a period of several weeks, our field personnel physically observed the buildings, reviewed documentation, and interviewed Port Authority personnel regarding building conditions, operations and maintenance procedures, and capital projects.

Because of the physical complexity of so large a project, the separation of individual systems into definable areas for inclusion in the reports of the various buildings was not easily achieved. While we have attempted, with the assistance of Port Authority personnel, to assign systems to their associated buildings, the assignments are based on our opinion, with input from the Port Authority, of where the systems logically fall. As the division of buildings and systems into individual entities was never planned or previously assigned, any attempt to separate the buildings and systems for individual transactions should be carefully studied and documented. As we understand from the Port Authority that the WTC transaction will be accomplished by treating the complex as a single entity, the division of buildings and systems in this report has been done to clarify the reporting and simplify the task of reading so large a document.

Merritt & Harris, Inc. selectively reviewed documentation available in the WTC Data Center, located on the 3rd floor of 5 WTC. Merritt & Harris, Inc. focused on those items relating to the physical buildings, and did not review such items as financial reports and leasing documentation. The primary documentation used by Merritt & Harris, Inc. was from the following categories in the Checklist Items:

A. General Property Information
D. Environmental Information (Note that this information was not in the Data Room, but was provided to Mr. Crandlemere in the Port Authority office of Mr. Phil Taylor)
E. Operating and Maintenance Manuals
I. Structural Integrity Inspection Reports
J. Facades
K. Mechanical Reports/Information
L. Vertical Transportation Profile & Inspection Reports
M. Electrical Reports
N. Blast Related Reports/Information
O. Life Safety Code Analysis

Attachment 3 is the Due Diligence Checklist, or listing of available documents as of October 31, 2000.

In addition, a set of original construction documents was available on CD ROM format. A selective review of these drawings was done to familiarize our staff with the basic building layouts, material selections, and design criteria. Due to the volume of documentation available, an exhaustive plan, specification and code review of this property was not performed. Merritt & Harris, Inc. accessed these documents in an attempt to clarify issues raised by observations in the field or to further research references to building components mentioned in the reports by other consultants available in the Data Room.

Our observations were limited to those portions of the project that were visible during the walk-through. In many areas, building finishes concealed structural components from view. Merritt & Harris, Inc. neither took material samples nor performed tests on the building materials or systems. Our investigation of the building facades was performed from ground level and from the roofs.

Some equipment observed was not operating during our visit due to seasonal requirements. No attempt was made to operate the equipment as the facility was occupied and appropriate climate control was required. In the case of idle machinery or equipment, our opinions were formed by interviewing available personnel and reviewing any maintenance records presented to us. In order to be as fully apprised as possible of the operating condition of the major pieces of machinery, a Mechanical Contractor should be retained to start the equipment and witness its operation over a period of time.

While the Port Authority does have a basic emergency plan for dealing with flooding on the property, there is no existing control method to prevent catastrophic flooding of the subgrade levels up to level B-2 due to the total flooding of the PATH tubes. Pockets for control doors were built into the perimeter slurry wall, but doors were never installed, as this method of protecting the building would pose a life-safety threat to trains and passengers in the PATH tubes. The complexity of this problem and the specific expertise needed to address the issues is beyond the scope of competence of Merritt & Harris, Inc. and has not been addressed in this report.

It is not the intent of Merritt & Harris, Inc. to assume any part of the design responsibility, but rather to report our findings to our Client to whom this report is addressed. It is further understood that as building maintenance is ongoing, some areas of concern noted in this report may have been addressed subsequent to our site visit and may no longer be applicable.

The square footage areas used in the following sections are as provided in the J.P. Morgan Offering Memorandum, dated June 21, 2000 (the Offering Memorandum), and in the J.P. Morgan Property Book, dated June 21, 2000 (the Property Book). Independent field measurement of buildings and/or tenant spaces or plan takeoffs is outside the scope of this assignment.

On behalf of the Client, Merritt & Harris, Inc. engaged an independent consultant to conduct a **Phase I Environmental Site Assessment and Asbestos Audit** at the site in conjunction with the due diligence. The survey was conducted by members of the staff of R.W. Crandlemere and Associates, Inc. (Crandlemere) of Weymouth, Massachusetts. The survey included visual observations of the site and buildings, and the accumulation and review of available documentation pertaining to asbestos, hazardous waste, and electromagnetic radiation generated by the roof-mounted communications transmission equipment. Crandlemere took no samples and made no physical tests. The results of the survey and any associated recommendations are contained as attachments to this report. Merritt & Harris, Inc. assumes no liability regarding asbestos audits, hazardous or toxic material monitoring, surveying, or reporting and cannot be responsible for the

work or opinions of other independent consultants engaged to do so. Merritt & Harris, Inc. reviewed the subconsultant's report and extracted summary information for inclusion within our narratives for the convenience of the reader. The environmental subconsultant's reports are provided as attachments to the individual building reports and in their entirety in Attachment 6 (separate binder) of this portion of the report.

On behalf of the Client, Merritt & Harris, Inc. engaged an independent consultant to conduct an **Elevator Review** at the site in conjunction with the due diligence. The survey was conducted by members of the staff of The BOCA Group International (BOCA) of New York, New York. The survey initially included visual observations of a pre-selected random sampling of 21 elevator and escalator devices at the buildings, and the review of available documentation pertaining to elevator maintenance and modernization programs. The sample elevators selected for observation were chosen to provide a representative specimen from each building and zone and included modernized, partially modernized, and original elevators. Following the initial sampling, BOCA further reviewed and observed additional devices based on callback data provided by the Vertical Transportation Department and on reports prepared by the Port Authority's independent elevator consultant. The reader should note that a bank of elevators (18-23B) was involved in a recent run-by incident. These elevators were not observed and have been excluded from our review to avoid interference with an ongoing legal investigation. The tenant-owned and operated elevators and escalators were not observed and do not form part of this report. Merritt & Harris, Inc. reviewed the subconsultant's report and extracted summary information for inclusion within our narratives for the convenience of the reader. The subconsultant's reports are provided in their entirety as attachments to the individual building reports.

On behalf of the Client, Merritt & Harris, Inc. engaged an independent consultant to conduct a **Curtainwall Investigation** at the site in conjunction with the due diligence. The survey was conducted by members of the staff of Heitmann & Associates, Inc. (Heitmann) of New York, New York. The survey included visual observations of the facades from interior spaces, grade level, and roofs of the buildings, and reviews of available documentation pertaining to the exterior wall maintenance and inspection programs. Heitmann personnel did not ride or descend on any scaffolding or rigging to observe the exterior walls. Merritt & Harris, Inc. reviewed the subconsultant's report and extracted summary information for inclusion within our

narratives for the convenience of the reader. The subconsultant's reports are provided in their entirety as attachments to the individual building reports.

The Merritt & Harris, Inc. assignment included a general review of the building's compliance with Title III of the Americans with Disabilities Act (ADA). Items of nonconformance are cited without regard for whether or not they are, by ADA definition, readily achievable. Factors to be considered in determining whether or not an action is readily achievable include the nature and the cost of the action needed, the overall financial resources of the operation, and the number of persons employed at the site. The decision as to which actions are to be undertaken rests, therefore, with the building ownership in consultation with its accountants, lawyers, and architects. Our general observation of the property's ADA status and related comments is not intended, and should not be construed, to replace a full ADA audit and report.

As stated in the Offering Memorandum, "The Port Authority is a municipal corporate instrumentality and political subdivision of the States of New York and New Jersey which provides transportation, terminal, and other facilities of commerce within the Port District. As such, in connection with the Transaction, the PA will continue to maintain exclusive jurisdiction with respect to certain administrative and governmental matters involving the Complex, including compliance with building, environmental, fire and health codes." The New York City Department of Buildings has indicated to our personnel that they do not maintain any records of violations for this property. A request for a Property Profile Overview for this block and lot number yields no records. The Fire Department provides normal fire fighting and a life safety service to the facility. A Memorandum of Understanding exists between the Port Authority and the Fire Department in which the Fire Department performs regular inspections and directly notifies the Port Authority Fire and Life Safety group of deficiencies to be corrected. Under a protocol with the New York City Fire Department, Port Authority Police personnel investigate certain fire alarms at the World Trade Center rather than transmitting such alarms to the New York City Fire Department.

The Merritt & Harris, Inc. report is intended for the use of the General Counsel of the Port Authority.

## SECTION IV - EXECUTIVE SUMMARY

### Project Scope

*Property Components*

The subject property consists of a 6-building complex (4 office buildings, a separate government office building, and a hotel) constructed on top of a 2-level retail mall and a 6-level Subgrade development. The Subgrade contains an underground parking garage, loading docks, storage facilities, and central mechanical and electrical services for the overall property. The Hotel, the New York Marriott World Trade Center (3 WTC), and the governmental office building, the Customs House (6 WTC), are not included in the transaction and, therefore, are not included in the scope of the Merritt & Harris, Inc. assignment or this report. The complex is located in the Financial District of downtown Manhattan, New York City and was completed in phases between 1970 and 1977. The following area summary information is taken from the Offering Memorandum and Property Book.

| Building | Year Built | Gross Sq. Ft. | Remeasured Sq. Ft. | Rent Roll Sq. Ft. |
|---|---|---|---|---|
| One | 1970 | 4,761,416 | 4,468,634 | 4,358,604 |
| Two | 1972 | 4,761,416 | 4,470,598 | 4,173,612 |
| Four | 1977 | 462,738 | 505,670 | 470,978 |
| Five | 1975 | 581,238 | 632,782 | 612,958 |
| **Subtotal Offices** | | **10,566,808** | **10,077,684** | **9,616,152** |
| Retail | 1970 | 614,901 | 440,327 | 427,448 |
| **Total** | | **11,181,709** | **10,518,011** | **10,043,600** |

**Common Site Features**

The following site features are common to all of the 7 Property Components:

*Legal Description*

Block 58, Lot 1

*Zoning District*

C6-4, C5-3

*Easements and/or Encroachments*

A property survey is reportedly being prepared, but was not yet completed at the time of this assignment. Our investigation of other documentation and interview of various Port Authority personnel during this assignment have yielded certain information about possible easements or encroachments.

The site is shared by 6 buildings and the retail mall. The Marriott Hotel (WTC 3) and the Customs House (WTC 6) are outside the scope of this transaction; however, there are known interconnections of services and access to shared facilities.

Conventional utility company easements are assumed. In addition there are public rights-of-way for the New York City Transit Authority subways and the PATH rail system throughout the complex.

Interconnecting bridges to three adjacent properties (130 Liberty Street, 2 World Financial Center, and 7 WTC) are reportedly the responsibility of the adjacent owners. There are, however, certain physical connections such as foundations, and service connections such as electrical power services that may be subject to easement or covenant agreements.

The WTC complex also includes a remote river water pumping station, west of West Street in Battery Park City. This station is located under the Plaza near the marina at the Hudson River and Liberty Place. The interconnecting river water loop piping runs underground from the pump station, east along Liberty Place, then north along the west side of West Street, and then eastward across West Street entering the complex at 1 WTC. There is also a river water return out-fall which occurs underground behind the sea wall near the adjacent 2 World Financial Center.

*Size/Layout*

The site is trapezoidal in shape and contains 15.65 acres. The site is bordered by Vesey Street on the north, Church Street on the east, Liberty Street on the south, and West Street on the west. The Marriott Hotel and the Customs House are excluded from the disposition; however, the land leased for those properties is included in the total site area noted.

*Topography*

The site slopes gradually downward from the east, where the street grade is roughly equal to Plaza Level, towards the west where the street grade is at Concourse level. The constructed Tobin Plaza, in the central area of the site, is accessed by gently sloped ramps up from Church Street, and by exterior stairways and escalators from the other streets.

*Flood Plain*

The bulk of the site towards the east side is located in Flood Zone C, an area of minimal flooding outside the 500 year flood plain as indicated on the National Flood Insurance Program Flood Insurance Rate Map, Community Panel Number 360497 0054B effective November 16, 1983. Two areas at the midpoint of the north and south boundaries are within Zone B, areas between the limits of the 100-year flood and 500-year flood, and the western edge of the site is within the 100-year flood zone. While the Port Authority does have a basic emergency plan for dealing with flooding on the property, there is no existing control method to prevent catastrophic flooding of the subgrade levels up to level B-2 due to the total flooding of the PATH tubes. Pockets for control doors were built into the perimeter slurry wall, but doors were never installed, as this method of protecting the building would pose a life-safety threat to trains and passengers in the PATH tubes.

*Geological Hazards*

The site is located in UBC Seismic Zone 2a, an area of minimal seismicity.

*Service Utilities*

A complete site survey is in the process of being compiled, but was not available at the time of this report. The information contained in this report is based upon a combination of directly observed utilities and information contained in other reports. In this way, the exact number and size of the utility services has not been included.

Electric - Consolidated Edison (New York Power Authority)
Steam - Consolidated Edison
Gas - Consolidated Edison
Water and Sewer - City of New York
Various telecommunications carriers

| | |
|---|---|
| *Underground Irrigation System* | None |
| *Access* | Pedestrian access is provided at grade on all four bounding streets of the complex and from the central Tobin Plaza. The project also has direct interior access to NYC subway systems (five interior access points to 3 separate subway lines) and the interstate PATH mass-transit systems.<br><br>Vehicular access for automobiles is limited to pre-screened tenants on a rental basis, to selected Port Authority employees, and to contractors having an agreement with the Port Authority for parking privileges. There are 4 ramps for access to the automobile parking areas; 1 entrance and 1 exit ramp (Ramps B&C) on the north end of the property on West Street, an exit ramp (Ramp D) on the south end of the property on West Street, and an entrance ramp (Ramp H) on the west end of the property on Liberty Street. These ramps are protected by guard station checkpoints and Delta barriers, which are mechanically operated barriers, which swing up out of the pavement to physically block the ramp.<br><br>Delivery access is by means of a ramp from Barclay Street, one block north. This ramp passes under an adjacent building, 7 WTC. It is protected by a security checkpoint. |
| *Paving* | Surrounding streets are paved with asphalt. Parking ramps are concrete. |
| *Sidewalks* | The sidewalks surrounding the complex are generally exposed aggregate concrete, with some areas of granite paving that have been installed to accent building entrances. |
| *Curbing* | Curbs at the roadways are steel. |
| *Plaza Deck* | The Plaza is a granite surfaced reinforced concrete deck with a bituminous waterproof membrane. Areas of the perimeter of the deck, particularly under the building overhangs of 4, 5, and 6 WTC remain the original concrete with exposed aggregate surface. Expansion joints occur at the perimeter of each of the Tower buildings, and along the east side of the Plaza at the high end of the Church Street entry stairway and ramps. |
| *Deck Drainage* | The Plaza generally pitches towards the central area near the fountain where the runoff is collected by a circular trench drain surrounding the recessed fountain area. |

*Landscaping*

Sidewalk wells, with cast iron gratings, framed in red granite pavers are provided for street trees along the Liberty, Church and Vesey Street sidewalks. Raised planters with shrubs and annual flowers separate the central stairway from the 2 ramps at the Church Street entrance to Tobin Plaza. All other plantings are contained in monumental sized concrete planters that also serve as security barriers to prevent unauthorized vehicular access. Other street furniture includes concrete benches and concrete and stainless steel security barriers in sculptural shapes.

*Site Lighting*

City street lighting on perimeter sidewalks, newly installed site lighting from the roof line of 4 and 5 WTC, and pole-mounted, multiple-lamp fixtures on the Plaza.

*Fencing*

Some rollaway security gates are provided at the base of exterior stairways to prevent unauthorized after-hours entry.

*Amenities/Special Features*

The major site amenity is the central Austin Tobin Plaza, a public space enclosed by the 6 buildings that make up the complex. The Plaza focuses on a central fountain and sculpture, representing the sun and its outward flowing rays. The Plaza is the focus of formal and informal activity during the warm weather months, when outdoor music, street vendors, and seating for the Plaza Level restaurant tenants all contribute to the life of the space. A smaller "Memorial Fountain" commemorating those who lost their lives in the terrorist bombing, is located at the west side of the Plaza between 1 WTC and the Hotel building. The Plaza is reportedly closed down in the winter months to prevent potential injury to pedestrians by the possibility of ice falling from the Towers.

The asphalt-paved area to the east of the site has recently had benches and planters installed, adding more outdoor seating for public use. A covered performance stage was installed in this area during the past summer for the Plaza's summer music program. A temporary "Green Market" is also one of the seasonal features used to draw street traffic to the site. Some sections of this area have at times been used for special parking requirements.

*Signage*

There is a polished stainless steel monolith with a bronze plaque and a red numeral designation at the main entrance door for each of the buildings in the complex. Additional exterior signage is building installed.

Mall entrances are marked with back-painted signs on the glass transoms above the entrance doors. Retail tenants with exterior exposure have window-mounted signage. Major commercial office tenants have signage on some of the entrance door transoms. Awnings with Mall signage have recently been installed at Mall entrances.

*Ancillary Structures*

The river water pump station is located about one block west of the site at Liberty Place and the Hudson River. It is an underground structure beneath the pavement of Battery Park City Plaza. It is included in the Central Plant Report.

There are some minor kiosk installations for bus shelters, street vendors, and taxi cab dispatchers around the site.

**Project Condition**

The buildings were originally constructed of good quality materials. The overall present condition of the property is good. However, as with any large complex of this age, ongoing repair and maintenance should be expected to be required.

*Site*

Site improvements are adequate and appropriate for a project of this size and status. The majority of the Plaza, which serves as the roof for the retail mall, was resurfaced in red and gray granite during the Plaza rehabilitation of 1998-99. The fountain was rehabilitated and made fully operational. New benches and planters were installed. The membrane waterproofing beneath the old pavement was probed and found to be functioning well. In general, the concrete sidewalks around the site perimeter are sound without tripping hazards, but there has been spalling and cracking over the years that is beginning to lead to an unattractive appearance. A 1999 study of the sidewalk conditions was performed by M.E.D.D, a unit within the Port Authority Engineering Department. M.E.D.D. included several recommendations for upgrades; however, there has been no decision to proceed with any of the work at this time. Plaza areas outside of the new granite surface have varying degrees of deterioration. However, the repairs have not been implemented pending the coordination of pavement repairs with the possible extension of retail areas under the building overhangs of 4 and 5 WTC. Pavement replacement is in progress along the West Street side of the site adjacent to the Customs House as a separate project under the auspices of the U.S. General Services Administration.

*Structural*

The building structures appear to be in adequate overall condition. Major structural repairs following the 1993 bomb blast were successfully completed and signed-off by a Permit to Occupy or Use issued by the Port Authority Office of the Chief Engineer on October 10, 1997. The repairs appear to have been properly engineered and executed. Following the bombing incident, stringent security measures were implemented at the vehicular entrances to the Plaza and subgrade facilities.

In the buildings we observed only minor cracking in some slabs, partitions or in stairwells of the buildings. Some minor slab cracks have been noted which should be monitored by the PA's structural consultant. The slabs at the truck dock and delivery area on level B-1 have deteriorated due to ice-melting salts that enter the building on vehicles during the winter. A slab replacement program is ongoing and should be continued until all of the damaged slabs are replaced. The monitoring of the visco-elastic movement dampers in the two Towers is an essential program that has been strongly recommended for continuation by the PA's outside structural consultant. Building movement is monitored by analysis of measurements taken and recorded by devices located in the 108th floor of 1 WTC. Analysis of these records is done by the Port Authority's independent engineer (LERA) and should continue in the future. In addition, physical sampling and analysis of the condition of the visco-elastic dampers is reportedly continuing on a 5-year cycle, with the next sampling to be done in 2001. The slurry wall that surrounds and contains the subgrade levels of the complex has some seepage that is contained by curbing and leaders, and is discharged by sump pumps in the lowest levels.

The slurry wall and the adjacent floor slabs that brace the wall are inspected on an ongoing basis to ensure that unsafe conditions do not develop. Structural Integrity Inspection (SII) Report I-38, dated April 3, 1998, provided in the Data Room, found the conditions to be acceptable. These periodic inspections should continue.

The rating of the structural fireproofing in the Towers and subgrade has been judged to be an adequate 1-hour rating considering the fact that all Tower floors are now sprinklered. An ongoing program of re-fireproofing the structural steel to the full thickness for 2-hour rating is in place. This work is done on a lease rollover basis whenever there is a full floor of space being built out for new occupancy. To date approximately 30 floors have been completed in the two towers. The PA will require this program to continue. The presence of asbestos containing

structural fireproofing is documented and abatement in tenant spaces is being done in conjunction with lease rollovers. Abatement of asbestos containing fireproofing material in elevator shafts is ongoing. Air monitoring and physical inspections are carried out as part of the regular asbestos O&M Plan. Patching of non-asbestos fireproofing is handled through a program of in-house inspection and repair.

*Exteriors*

Building exteriors are generally functioning adequately. A regular program of inspection is carried on by ABM, the maintenance contractor, and is monitored by a private consultant engaged by the Port Authority. Exterior caulking and repairs are done as required based on the findings of the 2 inspecting agencies. Ongoing repair to the finishes on the 4 and 5 WTC buildings should be expected and, within the 10-year term, it would be advisable to consider a wet-seal and repainting program for those 2 buildings. There have been proposals for refinishing the 2 Tower buildings which, to date have not yet been implemented. This issue will also need to be addressed within the 10-year term. Other exterior conditions, which require ongoing monitoring, and repair as necessary are the exterior marble panels on some of the lower areas of the retail base of the complex and the exterior plaster soffits on the 4 and 5 WTC buildings.

There has been a problem with ice forming on and falling from the Towers during early and late winter months. The problem is most severe when the temperature at the upper Tower levels (which is several degrees colder than at the Plaza Level) falls below freezing. During high humidity days, ice balls can form and dislodge from the wall and roof surfaces. Damage to nearby buildings and injury to pedestrians has occurred. The Port Authority is well aware of this condition and the PA Police Department takes appropriate action to restrict access to sidewalks and the Plaza when the condition occurs. When surrounding streets are involved, the NYC Police are also advised and involved accordingly. There does not appear to be an architectural solution to this problem as it is caused by an unusual atmospheric condition. In addition, there are incidences of noise generated either by the movement of the Tower corner panels or by the movement of underlying back up deck material during high wind conditions when the Tower movement is significant. There are no signs that this movement has caused any damage to the panels or attachments at this time.

*Roofs*

The roofs of 1 and 2 WTC are the original membrane systems protected by rigid insulation and a 5" thick concrete overlay. These roofs appear to be serving adequately, with only local repairs to the spalled concrete wearing course required over the next 5 years. The roof of 4 WTC is nearing the end of its anticipated service life and replacement should be anticipated. The roof of 5 WTC was replaced in 1991 and may still be under warranty. Requirements for warranty transfer should be investigated. The bituminous membrane under the Plaza deck, which acts as the roof of the retail area, was examined extensively as part of the work done when the Plaza was refinished last year. There are still some chronic leaks at specific locations; such as at the Tower expansion joints and the expansion joint along the Church Street side, but these leaks are corrected as they occur as part of maintenance.

*Interiors*

Interior conditions are generally good. Full floor office tenants are reportedly responsible for all finishes on their floors. Finishes on the multi-tenant floors will continue to need periodic replacement. Rest room finishes are now about 25 years old and thought should be given to a phased program of modernization on multi-tenant floors. The 20" x 20" ceiling tiles used in some areas are no longer manufactured and the replacement of these ceilings with standard grid ceilings, rather than having custom tiles manufactured, is recommended when replacement or modernization is necessary. Remediation of deficient tenant separation walls and public corridor walls on office floors is being accomplished as new tenant spaces are built-out. While some of these walls do not extend to the underside of the slab, the condition is not deemed to be an immediate problem in this fully sprinklered facility. Vestibule entries for mechanical rooms entered from fire stairs will need to be added in phases.

The Mall spaces are in good condition with various recent build-outs by national retailers. Phased upgrades of Mall common area finishes have also begun, and consideration should be given to continuing the upgrading throughout the rest of the Mall. Monitoring of the Mall ceiling suspension system is done on a regular basis and should continue to be part of the normal maintenance program. Two additional means of egress have been added to the Mall circulation pattern, following a 1992 study by the World Trade and Engineering Departments. Installation of the third additional Mall egress is pending.

*Vertical Transportation*

The 238 WTC elevators are being maintained under a full-service contract with Ace Elevator. The survey by BOCA Group International, Inc. initially included visual observations of a pre-selected random sampling of 21 elevator and escalator devices at the buildings, and the review of available documentation pertaining to elevator maintenance and modernization programs. The sample elevators selected for observation were chosen to provide a representative specimen from each building and zone and included modernized, partially modernized, and original elevators. Following the initial sampling, BOCA further reviewed and observed additional devices based on callback data provided by the Vertical Transportation Department and on reports prepared by the Port Authority's independent elevator consultant. An evaluation of the maintenance indicates that "maintenance practices range from acceptable to marginally acceptable, with definite room for improvement in the area of housekeeping." In addition the elevator survey reported significant deficiencies that should be addressed under the terms of the full service contract. In general, it was reported that the service contractor is not proactive in addressing problems and that close oversight by the PA Vertical Transportation Department is necessary to maintain acceptable service and maintenance levels.

The modernization of all passenger cabs with new interior finishes, overlay controllers, ADA features, and firemen's recall has recently been completed. The second phase of the modernization program, including switching over from motor generator sets to SCRs, retrofitting door operators, and installing new door-reopening devices, is ongoing (126 completed, 8 in progress) and should be continued to completion (104 not yet modernized). The modernization is resulting in better service and a higher quality ride. When completed, the elevator system can be considered to be equal to those of new Class "A" office buildings. The high-rise shuttle cars in 1 and 2 WTC and the 6 and 7 cars in each Tower are equipped with "elevator followers" which are designed to eliminate rope impact on shaft elements. The venting of elevator shafts in the two towers is through the elevator machine rooms, due to the configuration of elevators over elevators in the central cores. This has been accepted as the only viable solution by the Port Authority as the Code enforcing agent. A test sample of the "Captivate" system, a high resolution monitor carrying news, weather, and internet information within elevator cabs was recently completed. The system is now to be installed throughout the complex.

All escalators have been modernized with start/stop switches, comb plate switches, demarcation lights, caution signs, controlled descent devices, and remote monitoring systems. Carl White devices have thus far been installed on 2 escalator units.

*HVAC*

The mechanical systems were adequately designed and constructed using brand-name equipment, which provides adequate cooling for the complex. The freeze protection system, recently installed in the 108th floor mechanical equipment room (MER) of 1 WTC, is budgeted to be installed in all the buildings' MERs so that air conditioning will be available throughout the year (especially during normally cooler months when the outdoor temperatures rise higher than normal).

The 2 Towers exhibit a stack effect where there is either high negative or positive pressures that effect the opening and closing of doors and emit loud noise through the elevator shafts. This is particularly noticeable when there are large differences between indoor and outdoor temperatures, especially in the winter and on very humid days. The stack effect will also cause smoke from any subgrade fires to be pulled upward into the building. For this reason, a smoke evacuation system for the PATH station has been designed and budgeted (see Life Safety in this section).

In 1985, Lucius Pitkin Consulting Engineers, an independent consulting firm, was hired to examine the welds on the high-pressure steam pipe risers. The Pitkin Report stated that many welds exhibited flaws, such as insufficient penetration and cracks in circumferential welds. The report recommended that all welds be examined and that any weld lacking 50% or less penetration be removed and repaired. To date this work has not been done, nor have any welds exhibited leaks. Based on the piping system's satisfactory history, we recommend that the program of monitoring the pipe welds be continued and that the leaks be repaired as they occur. We do not find any evidence that warrants any program of system-wide corrective action.

Although in operation, the majority of equipment is past its published service life, and replacement of the equipment should be anticipated. A major capital project to update the air handling systems has effectively increased the service life and reliability of the air handling equipment. Equipment and component replacement is now performed as part of the ABM service contract.

Since its original construction, the central refrigeration plant has been expanded to include an additional 10,000 tons of capacity and improved performance. Full winter operation of the chilled water systems is now possible and redundant river water piping systems allow for improved service and maintenance programs. Both refrigeration plants operate on R-22 refrigerant. The use of Hudson River water for the cooling plant is in compliance with environmental regulations.

Merritt & Harris, Inc. reviewed the findings of a report written by Jaros, Baum, & Bolles (JB&B), Consulting Engineers, New York, New York, dated October 31, 1996. The report was written for the Port Authority and JP Morgan & Co. Inc. It presented an evaluation of the physical condition of the existing Base Building HVAC, electrical, plumbing, and fire protection systems at the WTC. The WTC 1, 2, 4, and 5; the Mall; and the Subgrade were covered in the report. The majority of the JB&B report's findings addressed issues that we consider to fall within the category of normal maintenance. The Port Authority has addressed, or is in the process of addressing and correcting, the issues noted in the JB&B report. Our observations and reviews of documents have confirmed that the issues are being addressed.

*Plumbing*

The plumbing systems appear to be functioning satisfactorily. Although operational, the majority of plumbing equipment is past its published service life, and replacement of the equipment should be anticipated. Equipment component maintenance and repair is performed as part of the ABM service contract.

Water hammer arrestors, on a 2" water line in a wall on the 55th floor of Tower 1, recently failed flooding the 55th - 44th floors. Samples of the arrestors were sent out for independent evaluation. It was determined that the bellows in the arrestors failed due to repeated expansions and contractions over a 27-year period. Therefore, it is recommended that a program be undertaken to replace all water hammer arrestors in all buildings, before more failures and flooding occur.

*Electrical*

The electrical systems appear to be functioning satisfactorily, and adequate electrical capacity is provided for all of the buildings. Major upgrades have taken place including feeder and bus duct replacements. The main electric substations are not in compliance with NYC Code and there is no variance in place. The primary issue is the lack of ground fault protection provision before the switchboard. It is understood that the Port Authority approved this configuration, and since the Port Authority is expected to remain the Code interpreter for this installation, new requirements for compliance will not occur in the future. Some of the electrical substations have been modernized as part of a project-wide infrastructure program. In some of the smaller closets, there are clearance issues where new equipment has been installed. These installations are reportedly grandfathered until any new equipment is added and have been accepted by the Port Authority in its role as Code interpretation official. A new standby power plant, located on the roof of 5 WTC and distribution network (beyond that for emergency power), is available for tenant use. It is understood that an operating certification is not required for this installation since it is not intended for use as a co-generation facility.

*Life Safety*

The life safety systems are appropriate for this type of facility, and have been upgraded during the life of the complex. Currently a new fire alarm system is being installed throughout the facility, and this installation is addressing open issues including return air smoke detection and annunciation, elevator lobby smoke detector activation, public address loudspeakers, and standpipe telephone jacks. The Fire Command stations in each building have been completed and approved. The majority of spaces are sprinklered, except for main lobbies, electrical and mechanical spaces, and some toilet rooms. The sprinklering plan is consistent with the requirements of the New York City Building Code. A survey is required to determine which floors may have inadequate fire hose reach, and to establish a plan to make these floors become code-comforming.

Technically, the stairwells of the Tower buildings should be vented. Because of the height of the stairwells, however the installation of venting fans would not be practical and would, most likely, pull smoke into the stairways from the corridors, a condition that is not favorable. The Port Authority is aware of the lack of venting in the stairwells and, as the code enforcement agency, has accepted that the addition of venting would cause an unsafe emergency exiting situation.

Because of the stack effect, fumes and smoke from fires that may occur in the PATH station can migrate into the Mall area and eventually into the buildings. A plan to install smoke barrier drops at the PATH entrance ceiling and ducted smoke evacuation from the PATH station through the subgrade space have been approved and budgeted. This plan appears to be a sound one. We are informed that this work will begin shortly.

An egress study has been made which recommended that 3 additional means of egress be constructed in the Mall. Two exits were added and a third, exiting from the vicinity of the present Godiva Chocolatier shop, is planned and budgeted.

*Energy Conservation*

The buildings have a mix of clear single-pane glazing or tinted single-pane glazing. There is no energy management system, although the central plant control system can be used to check trends and manually optimize the equipment operation. It is of note that electrical power is provided by Consolidated Edison, but purchased directly from the New York Power Authority at a relatively low cost.

*Maintenance*

Electrical, HVAC and general maintenance is performed under the terms of a consolidated performance-based service contract by ABM Engineering, with oversight by the Port Authority World Trade Department's Building Services Management Division. In general, maintenance of the systems appears to be adequate. Housekeeping (cleaning) deficiencies were noted in stairwells, electrical closets, and service areas. Ongoing repairs and replacement of components were observed to be in progress in various areas. It should be noted that the ABM Engineering contract calls for both the maintenance and repair of equipment. If a new contract is entered into with a service company for maintenance only, the replacement of equipment must be accounted for separately.

*ADA Accessibility*

The office building entrances, travel routes, and elevators are ADA compliant. ADA compliance on most full tenant floors is reportedly the responsibility of the tenants under terms of the leases (Merritt & Harris, Inc. did not review the leases), which would be a common practice. ADA compliance for toilet rooms on multi-tenant floors is a building owner's responsibility. Upgrades to toilet rooms, signage, and door hardware for building common spaces should be made on multiple-tenant floors.

The Mall has ADA-accessible entrances on grade in numerous clearly marked locations. All ADA entrances have power-assist doors. Although the 2 Mall levels are individually accessible, interior interconnection between the Concourse and the Plaza Levels is available only by ramp and elevator in the 5 WTC building, the office building elevators in 4 WTC, and a private tenant elevator in the Border's Store. We recommend that the redevelopment of the vacant retail space in the southeast section (4 WTC area) include consideration for a public elevator in the Mall common area to streamline ADA access between levels. Public rest rooms in the Mall are accessible as defined by the ADA.

*Violation Status*

As stated in the Offering Memorandum, "The Port Authority is a municipal corporate instrumentality and political subdivision of the States of New York and New Jersey which provides transportation, terminal, and other facilities of commerce within the Port District. As such, in connection with the Transaction, the PA will continue to maintain exclusive jurisdiction with respect to certain administrative and governmental matters involving the Complex, including compliance with building, environmental, fire and health codes." The New York City Department of Buildings has indicated that they do not maintain any records of violations for this property. A request for a Property Profile Overview for this block and lot number yields no records. The Fire Department provides normal fire fighting and a life safety service to the facility. A Memorandum of Understanding exists between the Port Authority and the Fire Department in which the Fire Department performs regular inspections and directly notifies the Port Authority Fire and Life Safety group of deficiencies to be corrected. Under a protocol with the New York City Fire Department, Port Authority Police personnel investigate certain fire alarms at the World Trade Center rather than transmitting such alarms to the New York City Fire Department.

*Environmental Site Assessment*

During construction, essentially all soil down to 75' was removed, eliminating any potential pollution from previous uses of the site. R.W. Crandlemere & Associates identified other locations of recognized environmental conditions in the search radius, but concludes that none of these sites or the current use of the WTC, are likely to impact the environmental integrity of the subject site.

The use of Hudson River water for the cooling plant is in compliance with regulations. The current NYDEC State Pollutant Discharge Elimination System (SPDES) permit extends to May 1, 2004. Monitoring reports and SPDES inspections performed in 1999 and 2000 state, "no reported permit limit exceedences."

The 1999 Denny & Associates report concerning the broadcasting and transmission devices mounted on the roof of WTC1 were reviewed. Operational guidelines are currently in place to provide protection to trained workers and escorted visitors. Based on the Denny & Associates report, R.W. Crandlemere & Associates recommends further additional investigation concerning radio frequency exposure levels for visitors to the observation deck on 2 WTC.

The R.W. Crandlemere & Associates *Environmental Site Assessment* is included in its entirety in this report.

*Asbestos*

Asbestos-containing materials (ACM) were used as sprayed-on fireproofing and pipe insulation during the original construction. Vinyl-asbestos tile is present throughout the complex. The Port Authority has identified the areas having ACM, which are primarily tenant spaces, mechanical rooms, subgrade areas, and elevator shafts. A large portion of the ACM has been removed and the abatement process is continuing as tenant leases rollover and the spaces are retrofitted. Some abatement projects are carried in the capital budgets for 2001-2005 and other VAT and spray-on abatement work is treated as an operating cost. An Operations and Maintenance Plan has been produced and specific staff personnel have been trained and certified as ACM handlers to deal with incidental disturbance of the material. Much of the ACM in the pipe insulation in the subgrade areas has been removed. Tenants occupying floors that may still contain asbestos material have been formally notified.

There is a reported litigation in process for cost recovery related to ACM abatement. This litigation was not reviewed as part of this report and questions pertaining to the subject should be addressed to the appropriate legal entity.

R.W. Crandlemere & Associates reports addressing the presence of ACM are provided in each individual building section of this report.

*Specific Recommendations*

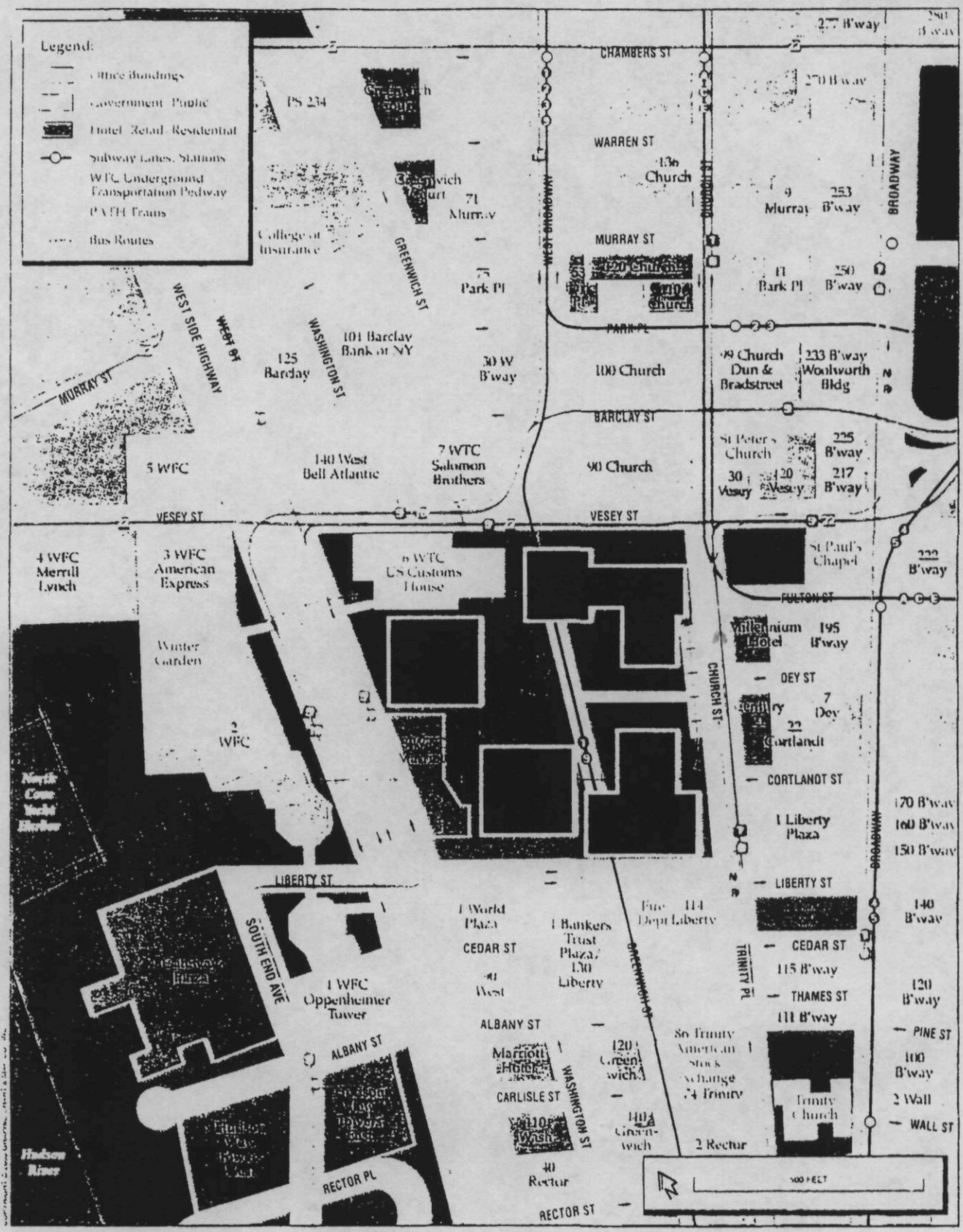
Specific recommendations, items of concern, and building deficiencies are noted in "**E. Recommendations**" section of the individual property component reports. Priorities are divided into **Immediate (0-1 Year)**, **Future (1-5 Years)** and **Future (6-10 Years)** categories.

## EXECUTIVE SUMMARY ATTACHMENTS

1. Neighborhood Map (Reproduced with permission from J.P. Morgan Property Book)
2. Résumés of participating Merritt & Harris, Inc. staff personnel
3. Due Diligence Check List of Documents as of October 31, 2000
4. WTC - Proposed 2001 Capital Plan
5. WTC - Proposed 2002-2005 Capital Plan
6. R.W. Crandlemere & Associates Environmental Site Assessment Phase I Report (separate binder)
7. BOCA Group International, Inc. - Overall Observation

# ATTACHMENT 1

Neighborhood Map
(Reproduced with permission from J.P. Morgan Property Book)


Legend:
Office Buildings
Government, Public
Hotel, Retail, Residential
Subway Lines, Stations
WTC Underground Transportation Pedway
PATH Trains
Bus Routes
CHAMBERS ST
WARREN ST
MURRAY ST
PARK PL
BARCLAY ST
VESEY ST
CORTLANDT ST
LIBERTY ST
CEDAR ST
THAMES ST
FULTON ST
DEY ST
PINE ST
WALL ST
ALBANY ST
CARLISLE ST
RECTOR PL
RECTOR ST
BROADWAY
WEST BROADWAY
CHURCH ST
GREENWICH ST
WASHINGTON ST
WEST SIDE HIGHWAY
SOUTH END AVE
TRINITY PL
PS 234
College of Insurance
101 Barclay Bank of NY
125 Barclay
30 W B'way
100 Church
90 Church
140 West Bell Atlantic
7 WTC Salomon Brothers
5 WFC
4 WFC Merrill Lynch
3 WFC American Express
6 WTC US Customs House
Winter Garden
1 WFC
1 WFC Oppenheimer Tower
1 World Plaza
1 Bankers Trust Plaza / 130 Liberty
Fire 114 Dept Liberty
1 Liberty Plaza
St Paul's Chapel
Millennium Hotel
Marriott Hotel
Trinity Church
Hudson River
North Cove Yacht Harbor
Battery Park
Hudson River Park
Esplanade
Ground Zero
Murray
Park Pl
Dey
Cortlandt
Vesey
Church
Wall
Rector
Green-wich
Wash
233 B'way Woolworth Bldg
Church Dun & Bradstreet
St Peter's Church
225 B'way
217 B'way
222 B'way
195 B'way
170 B'way
160 B'way
150 B'way
140 B'way
120 B'way
115 B'way
111 B'way
100 B'way
2 Wall
80 Trinity American Stock Exchange
74 Trinity
500 FEET

# ATTACHMENT 2

Resumes of participating Merritt & Harris, Inc. staff personnel

## THOMAS C. RICHARD, AIA

*President & Chief Executive Officer*

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| ACCREDITATION | Registered Architect in the State of New Jersey |
| PROFESSIONAL AFFILIATIONS | New Jersey Society of Architects<br>Architects League of Northern New Jersey<br>American Institute of Architects (AIA)<br>American Society for Testing and Materials (ASTM)<br>Mortgage Bankers Association - New York<br>Urban Land Institute |
| EDUCATION | Bachelor of Arts, Fordham University<br>School of Architecture, Pratt Institute |
| MERRITT & HARRIS, INC.<br>*New York, NY* | Mr. Richard joined the consulting firm in 1981 as a Project Manager and was appointed Vice President in 1984. In 1987 he was named Senior Vice President & Principal heading the Due Diligence Division, which provides total building evaluation services to the real estate financing and investment community.<br><br>In 1996, Mr. Richard became President & CEO of Merritt & Harris, Inc. |
| HARSEN & JOHN PARTNERSHIP ARCHITECTS<br>*Tenafly, NJ* | Employed as a Senior Project Supervisor, Mr. Richard worked for the architectural firm from 1969 through 1976. His responsibilities included design and construction supervision of multi-million dollar educational, municipal, and multi-family housing projects.<br><br>Mr. Richard rejoined the partnership in 1978 as the Director of Operations, with supervisory control of design, document production, construction, and administrative functions of that forty person office, and organized a subsidiary architectural interiors company. |
| G&R SERVICES<br>*Bogota, NJ* | From 1976 to 1978 Mr. Richard was a partner of a design/build construction company. His duties included administration, construction supervision, design, and estimating. He served as on-site Educational Facilities Design Consultant to the Federal Republic of Nigeria for the design of the National Educational Technology Center in Kaduna, Nigeria. |

## ROBERT G. WEILAND, R.A.

*Principal - Due Diligence*

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|---|---|
| ACCREDITATION | Registered Architect in the State of New York |
| EDUCATION | Bachelor of Architecture, Pennsylvania State University<br>Graduate Study - Architectural Technology, Columbia University |
| MERRITT & HARRIS, INC.<br>*New York, NY* | Mr. Weiland joined the consulting firm in 1984 as a Project Manager and evaluated various projects throughout the United States. His responsibilities include review of construction drawings and specifications, and field observation of new and existing construction. Appointed Vice President in 1988, he assumed the responsibilities of coordinating nationwide, multi-site portfolio observations, and developing formats for the presentation of real estate tax appeal projects for municipal government clients.<br><br>In 1996, Mr. Weiland was appointed a Principal of Merritt & Harris, Inc. |
| *Major Projects* | Chrysler Building - New York, NY<br>Macy's Portfolio - Various Nationwide Locations<br>IBM Tower - Atlanta, GA<br>Rockefeller Center - New York, NY<br>Alamoana Shopping Center - Honolulu, HI |
| IFFLAND, KAVANAGH, WATERBURY, PC<br>*New York, NY* | An Associate of the firm, Mr. Weiland was responsible for industrial, commercial, and television broadcast projects, from initial client contact through program development. His duties also included the production of construction drawings and specifications, and supervision of construction. He was an employee of the firm from 1978 to 1984. |
| MARINE MIDLAND BANK<br>*New York, NY* | Mr. Weiland worked for the bank as an Architectural Designer in the facilities management department from 1974 to 1978. His job responsibilities entailed client contact for program development and preliminary design, as well as construction document preparation and field supervision for the construction of corporate office facilities and branch banks. |
| URS/MADIGAN - PRAEGER<br>*New York, NY* | As a Project Architect in 1973, Mr. Weiland prepared construction documents and made field inspections for renovation projects including, municipal garages, stadiums, and waterfront facilities. |

## JACK M. KAGAN

*Principal - Mechanical/Electrical Engineer*

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| ACCREDITATION | Certified, National Board of Boiler and Pressure Vessel Inspectors<br>Certificate of Competency, State of New York Department of Labor, Bureau of Boilers |
| PROFESSIONAL AFFILIATION | American Society of Mechanical Engineers |
| EDUCATION | Associates Degree in Applied Science - Mechanical Technology, New York City Community College<br>Bachelor of Mechanical Engineering Degree, Pratt Institute |
| MERRITT & HARRIS, INC.<br>*New York, NY* | Mr. Kagan joined the consulting firm in 1984 as a Mechanical Maintenance Equipment Specialist. His responsibilities included design review of mechanical, plumbing, electrical plans and specifications, and field evaluation of new and existing construction. In 1988 Mr. Kagan was named Assistant Vice President-Electro/Mechanical Engineer.<br><br>Mr. Kagan was appointed a Principal of Merritt & Harris, Inc. in 1996. |
| *Major Projects* | Ice Palace - Tampa, FL<br>Chrysler / Kent Buildings - New York, NY<br>Las Colinas Office Buildings - Dallas, TX<br>The Waikaloa Resort - Honolulu, HI<br>Greenway Office Towers - Houston, TX |
| ROYAL INSURANCE CO.<br>*New York, NY* | As a member of the Boiler and Machinery Department from 1981 to 1984, Mr. Kagan was responsible for the technical support of sixty-five field offices and home office departments, for all phases of boiler and machinery equipment insurance. |
| HEMPSTEAD RESOURCES RECOVERY<br>*Garden City, NY* | Mr. Kagan worked as a process supervisor from 1978 to 1980 and was responsible for the processing of two thousand tons of municipal garbage per day for metals recovery and fuel production for a 40 MW electric generating station. |
| E.I. DUPONT<br>*Newark, NJ* | Serving as a mechanical supervisor in the Engineering Department, Mr. Kagan was responsible for project engineering, minor construction, and powerhouse and waste treatment operations. He also served as Production Supervisor in the Organic Color Pigments Finishing Department. Mr. Kagan worked at E.I. DuPont from 1974 to 1978. |

## PETER J. BRADY, P.E.

*Project Manager - Due Diligence*

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|---|---|
| ACCREDITATION | Professional Engineer in New York State |
| EDUCATION | Bachelor of Civil Engineering, City College, City University of NY<br>Master of Civil Engineering, City College, City University of NY |
| MERRITT & HARRIS, INC.<br>*New York, NY* | Mr. Brady joined the consulting firm in 1994 as a Project Manager for the evaluation of various projects throughout the United States. His responsibilities include the review of construction drawings and specifications, and field observation of new and existing construction. |
| *Major Projects* | DisneyWorld Swan & Dolphin Hotels - Orlando, FL<br>Hato Rey Tower - San Juan, Puerto Rico<br>Ritz Carlton - Naples, FL<br>West Port Plaza - St. Louis, MO<br>Wolfchase Galleria - Memphis, TN |
| DEPARTMENT OF HOUSING PRESERVATION & DEVELOPMENT<br>*New York, NY* | Mr. Brady was hired in 1960 as an Assistant Civil Engineer. His responsibilities included being a field engineer for all phases of hi-rise residential construction. Promoted to Civil Engineer in 1964, his new responsibilities included the review of hi-rise plans and specifications for code compliance, coordination, and completeness. As a Senior Civil Engineer, Mr. Brady supervised engineers on review and coordination of plans and specifications.<br><br>In 1972 Mr. Brady was promoted to Chief of Engineering and Construction for the New York HPD's Middle Income Housing Program. During the 1980s he directed the HPD's conversion from new construction to substantial and moderate rehabilitation. He developed procedures and forms for recording and evaluating the condition of vacant/vandalized buildings. Mr. Brady also prepared construction standards for compliance with various loan program requirements, and developed parameter cost estimating procedures using personal computers and spreadsheet packages. |

## JOSEPH J. MARCIANO, P.E.

*Mechanical/Electrical Engineer*

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|---|---|
| ACCREDITATION | Licensed Professional Engineer in the State of New York |
| PROFESSIONAL AFFILIATION | Member, American Society of Heating, Refrigerating and Air Conditioning Engineers, Inc. (ASHRAE) |
| EDUCATION | Bachelor of Science, Cornell University<br>Construction Management Diploma - The Real Estate Institute at NYU |
| MERRITT & HARRIS, INC.<br>*New York, NY* | Mr. Marciano joined the firm as a Mechanical Engineer in 1996. His job responsibilities include design review services for adequacy and completeness of mechanical and electrical systems for new construction and renovation work. Mr. Marciano's due diligence work includes detailed reviews of the HVAC, plumbing, electrical, life safety, and energy conservation systems of existing buildings. |
| *Major Projects* | Warner Theater Building - Washington, DC<br>Blanchard Plaza - Seattle, WA<br>Greenwich Office Park - Greenwich, CT<br>Reston Town Center - Reston, VA<br>West Port Plaza - St. Louis, MO |
| COMPREHENSIVE DEVELOPMENT CORPORATION<br>*New Rochelle, NY* | As a Construction Consultant from 1991 through 1996, Mr. Marciano provided estimating, scheduling, and claim servicing, as a well as site evaluations, and plan review and coordination. His various responsibilities, included coordinating the mechanical, electrical, and plumbing work at two primary schools for the New York City School Construction Authority. Mr. Marciano also coordinated the contractors in the field, maintained the project records and interfaced with the designers and the client. |
| NASCO ASSOCIATES<br>*New York, NY* | Mr. Marciano served as a Project Manager and Senior Estimator for this construction management and consulting firm. He specialized in field coordinating and project cost estimating during all stages of design, from conceptual to final, including change order evaluation. Other duties included scheduling, inspecting, handling contractor claims and performing value engineering studies. Mr. Marciano also served as an engineering audit officer on the Stuyvesant High School project in Battery Park City. Mr. Marciano worked for Nasco Associates from 1987 to 1991. |

# ATTACHMENT 3

Due Diligence Check List of Documents

WORLD TRADE CENTER
DATA CENTER
DUE DILIGENCE CHECKLIST
(As of October 31, 2000)

| ITEM | | |
|---|---|---|
| A | GENERAL PROPERTY INFORMATION | |
| | 1 | Offering Memorandum (x2) |
| | 2 | Property Book (x2) |
| B | LEASING INFORMATION | |
| | 1 | Argus Rent Roll as of 10/1/00 |
| | 2 | Port Authority's Rent Roll |
| | 3 | WTC Fixed Billing System as of 11/1/00 |
| | 4 | Leasing Activity Reports |
| | | a. June-Current 2000 |
| | 4 | Retail Sales Reports |
| | | a. 1998 & 1999 |
| | | b Year to Date 2000 |
| | | c Total Sales by Store - First Six Months (2000 vs. 1999) |
| | 5 | Port Authority ("PA") Comptroller's Suffix Descriptions for WTC Fixed Rent Roll |
| | 6 | Copies of Retail, Office and Subgrade Leases and Lease Abstracts |
| | | a. Office Tenants |
| | | b Retail Tenants |
| | | c Subgrade Tenants |
| | | d Telecommunication/Broadcasting Tenants |
| | 7 | Leases Under Negotiation and Expected Terms for 2000 |

| ITEM | |
|---|---|
| 8 | PA Comptroller's List of WTC Percentage Agreement Tenants |
| 9 | Telecommunication/Broadcasting Agreements |
| | a. Summary of deals |
| 10 | Copies of Existing Ground Leases |
| | a. Marriott Hotel |
| | i Privilege Permit dated as of 1/1/98 to HMH WTC, Inc. |
| | b Customs House |
| 11 | Remeasurement Study |
| C | FINANCIAL INFORMATION |
| 1 | WTC Allocation Methodology Summary of Financial Statements included in the Offering Memorandum |
| 2 | 2000 PA Operating Forecast |
| 3 | Historical Operating Statements [1997-1999] |
| 4 | Payroll |
| 5 | Real Estate Taxes |
| | a. Current Assessed Valuation for Block 58, Lot 1 |
| | b Agreement between the PA and the City of New York, dated as of 1967 regarding Payments in Lieu of Taxes ("PILOT") |
| | c 1999/00 letter to New York City ("NYC") Explaining PILOT Calculation |
| 6 | Agreement between the PA and The Alliance For Downtown New York, Inc., with respect to BID Payments |
| | a. February 9, 1995 Agreement |
| | b December 24, 1998 Amendment |
| 7 | Capital Expenditures |
| | a. Updated Capital Plan |
| 8 | Miscellaneous |

| ITEM | |
|---|---|
| | a. 10/1/00 Rental Receivables Reports |
| D | ENVIRONMENTAL INFORMATION |
| 1 | Summary of Environmental and Asbestos Due Diligence |
| 2 | Asbestos Records, including a disclosure memo, identifying known locations of asbestos-containing materials; abatement project files; quantities removed; and estimates of remaining quantities |
| 3 | Known Location of Asbestos |
| 4 | NYS DEC State Pollutant Discharge Elimination System (SPDES) Discharge Permit, dated 4/12/99 |
| 5 | Annual Regulatory Permits/Licenses, including Petroleum and Chemical Bulk Storage |
| | a NYS DEC Petroleum Bulk Storage Registration Certificate, issued 8/4/98 |
| 6 | Hazardous Materials Response Plans, inventories and certificates |
| 7 | Hazardous Waste Manangement records and inspections |
| 8 | Annual U.S. Environmental Protection Agency SARA Title III Community-Right-To-Know Inspection Reports-Tier II |
| 9 | Annual New York State Department of Environmental Conservation Annual Environmental Audit and Toxic Release Inventory |
| 10 | Evaluation of Radio Frequency Environment at the WTC-North Tower (Richard Tell 9/97) |
| 11 | RE-Evaluation of Radio Frequency Environment at the WTC-North Tower (Supplemented 9/5/99, revised 3/21/00) |
| 12 | Denny & Associates: Electromagnetic field strength survey - South Tower (1/99) |
| 13 | Investigation of RF Safety Cosiderations on the WTC Antenna Mast (Richard Tell 5/12/00) |
| 14 | Condenser, Hot & Chilled Water Report as of 9/30/00 |
| 15 | United States of America Federal Communications Commission Antenna Structure Registration, issued 3/23/98 |

| ITEM | |
|---|---|
| E | OPERATING AND MAINTENANCE MANUALS |
| 1 | River Water Pump Station - Vol. 1 |
| 2 | Remote Lighting Control System - Vol. 2 |
| 3 | Chiller Plant Addition B6 Refrigeration Plant - Black Binder |
| 4 | Mechanical System: Central Refrigeration Plant - Vol. 3 |
| 5 | Mechanical System: Central Refrigeration Plant (2500 ton chillers) - Vol. 3A |
| 6 | Electrical System: Central Refrigeration Plant - Vol. 4 |
| 7 | Electrical System: Central Refrigeration Plant (2500 ton chillers) - Vol. 4A |
| 8 | High Voltage Distribution System - Vol. 5 |
| 9 | Low Voltage Distribution System, Towers A & B - Vol. 6 |
| 10 | Emergency Power Distribution System - Vol. 8 |
| 11 | Plaza Sculpture Fountain System - Vol. 9 |
| 12 | Low Voltage Distribution System, NEPB & SEPB - Vol. 10 |
| 13 | Low Voltage Distribution System, Subgrade Levels - Vol. 11 |
| 14 | Smoke Detection System-Observation Deck, Tower B - Vol. 12 |
| 15 | Domestic Water System: Tower A & B - Vol. 14 |
| 16 | HVAC System Tower A & B - Vol. 15 |
| 17 | Elevator System - Vol. 20 |
| 18 | Antenna Heating System - Tower A - Vol. 21 |
| 19 | Fire Protection System - Vol. 23 |
| 20 | Sewage & Sump System Sublevels Tower A & B - Vol. 25 |
| 21 | Window Washer & Exterior Platform Equipment Towers A & B - Vol. 31 |
| 22 | Window Washing & Exterior Wall Maintenance Systems SEPB & NEPB - Vol. 32 |

| ITEM | | | |
|---|---|---|---|
| | 23 | | Computer Cooling Water System - Towers A & B - Vol. 33 |
| | 24 | | Computer Cooling Water System - NEPB & SEPB - Vol. 34 |
| F | PERFORMANCE INDICATORS | | |
| | 1 | | Fourth Quarter '99, First & Second Quarter '00 |
| G | CAPITAL EXPENDITURE CONTRACTS | | |
| | 1 | | Memorandum summarizing Elevator Modernization Programs |
| H | SERVICE CONTRACTS | | |
| | 1 | | Contract WTC-799.700: Amendment No.1 to Agreement to Perform Maintenance of Elevators, Dumbwaiters & Escalators: 1,2,4,& 5 WTC (3/18/99) |
| | 2 | a | Contract WTC-891.073: Furnish, Install and Configure Office Space Security System Software at the World Trade Center |
| | | b | Contract WTC-799.610: Maintenance of Office Space Security System Software at the WTC (5/94) |
| | 3 | | Contract WTC 845.071: Modernization of Elevators, Dumbwaiters and Escalators: 1 WTC (3/94) |
| | 4 | | Contract WTC 838.071: Modernization of Elevators and Escalators- 4 & 5 WTC (9/93) |
| | 5 | | Contract WTC 846.071: Modernization of Elevators and Escalators 2 WTC (3/94) |
| | 6 | | WTC Agreement No. 990102: Provision of Construction Management Services on a "Call-In" Basis |
| | 7 | | TDI Advertising Contract (The Mall) |
| | 8 | | Contract WTC 799.60: Ironbound Flooring Installation |
| | 9 | | Contract WTC 891.074: Purchase of Key & Lock Cylinder System (office space security system hardware) |
| | 10 | | Contract WTC 799.47A: Maintenance Painting via Work Order 1, 2, 4 & 5 WTC |
| | 11 | | Contract WTC 822.071: Emergency Power For Condenser Water System No. 1 |

| ITEM | |
|---|---|
| 12 | Fire Alarm Maintenance Replacement Parts & Technical Services (Req. #52618) |
| 13 | Contract WTC 799.39: Maintenance of Centrifugal Refrigeration Machines with Supplemental Agreement and Extension |
| 14 | Contract WTC 799.710: Agreement to Perform Consolidated Electrical, Mechanical & General Maintenance Services |
| 15 | Contract WTC 799.688: Provide Maintenance of Six (6) Diesel Generators |
| 16 | Exercise of Option Period Agreement with Grand Central Neighborhood Social Services Corp. to Provide Labor for the Collection and Sorting of Recyclable Paper |
| 17 | Contract PSE - 727: Refinishing & Restoration Services of the Stainless Steel Surfaces – Concourse, Skylobby Levels of 1, 2, 4 & 5 WTC |
| 18 | Contract PSE - 801: Restoration of Stainless Steel & Other Metal Surfaces |
| 19 | Cleaning & Cleaning Related Services – Request for Proposals |
| 20 | Contract PSE - 864: Collection of Recyclable Waste Paper – Agreement with Manhattan Bowery Management Corp., NY |
| 21 | Contract PSE - 634: Trash Removal & Recycling Service at the WTC |
| 22 | Contract PSE - 821: Refuse Removal, Recycling & Disposal |
| 23 | Contract PSE - 821: Refuse Removal, Recycling & Disposal at WTC for 2 years |
| 24 | Contract PSE - 850: Removal of Construction Debris from the WTC |
| 25 | Contract WTC-463.00: Removal of Construction Rubbish, dated June 1995 |
| | a Assignment and Assumption with Consent of Contract WTC-463.00: Removal of Construction Rubbish, dated October 1996 |
| 26 | Contract WTC-697.00: Construction Labor Services |
| | a Amendment Number One to Contract WTC 697.00: Construction Labor Services |
| 27 | Contract WTC-457.03: Design Build Services for 1, 2 & 3 WTC |

| ITEM | | |
|---|---|---|
| | 28 | Maintenance of Office Space Security System Software |
| | 29 | Contract WTC 799.56A: Agreement to Provide Fire Safety Director Service-1,2,4 & 5 WTC |
| | 30 | Design/Build Services for Tenants |
| | 31 | Contract WTC 799.690: Fire Alarm System Service Agreement for the World Trade Center Complex |
| | 32 | Contract WTC 115.300: Removal and Disposal of Vinyl Asbestos Floor Tiles and Other Asbestos-Containing Material Via Work Order (11/99) |
| | 33 | Contract WTC 881.072: Rehabilitation of B-1 Level (Truck Dock) Floor Slab (9/99) |
| I | STRUCTURAL INTEGRITY INSPECTION REPORTS by LESLIE E. ROBERTSON | |
| | 1 | Concourse, Subgrade, Marriott Back of House, 4 & 5 WTC Space Usage (11/20/98) |
| | 2 | Concourse, Subgrade, Marriott Back of House, 4 & 5 WTC Space Usage (12/24/97) |
| | 3 | River Water Pump Station (9/22/98) |
| | 4 | River Water Pump Station (4/28/95) |
| | 5 | Concourse Plaster Ceilings (9/18/98) |
| | 6 | Accessible Columns - 4 & 5 WTC (8/19/98) |
| | 7 | Elevator Pits & Machine Rooms - 1, 2, 4 & 5 WTC (10/30/99) |
| | 8 | Elevator Pits & Machine Rooms - 1, 2, 4 & 5 WTC (7/20/98) |
| | 9 | Elevator Pits & Machine Rooms - 1, 2, 4 & 5 WTC (12/18/97) |
| | 10 | Exterior Plaster Soffits - 4 & 5 WTC (7/20/00) |
| | 11 | Exterior Plaster Soffits - 4 & 5 WTC (7/15/98) |
| | 12 | Exterior Plaster Soffits - 4 & 5 WTC (8/31/96) |
| | 13 | Space Usage Survey - 1 & 2 WTC (6/15/98) |
| | 14 | Space Usage Survey - 1 & 2 WTC (7/31/97) |

| ITEM | |
|---|---|
| 15 | Space Usage Survey - 1 & 2 WTC (9/20/96) |
| 16 | Space Usage Survey - 1 & 2 WTC (9/20/96) |
| 17 | Slurry Walls & Adjacent Slabs - 1 & 2 WTC (6/98) |
| 18 | Slurry Walls & Adjacent Slabs - 1 & 2 WTC (5/28/97) |
| 19 | Slurry Walls & Adjacent Slabs - 1 & 2 WTC (7/16/96) |
| 20 | Accessible Columns - 1 & 2 WTC (5/30/98) |
| 21 | Accessible Columns - 1 & 2 WTC (5/23/97) |
| 22 | Accessible Columns - 1 & 2 WTC (5/1/96) |
| 23 | Floor framing - 4&5 WTC (7/24/98) |
| 24 | Plaza Level Box Columns (5/8/98) |
| 25 | Lobby Ceilings - 1 & 2 WTC (5/1/98) |
| 26 | Lobby Ceilings - 1 & 2 WTC (6/30/97) |
| 27 | Accessible Columns - 4 & 5 WTC (1/26/98) |
| 28 | Marble Panel Wall Inspection - 3, 4, 5 & Concourse Level at WTC (1/15/98) |
| 29 | Marble Panel Wall Inspection - 3, 4, 5 & Concourse Level at WTC (10/1/97) |
| 30 | Concourse Ceilings (5/23/00) |
| 31 | Concourse Ceilings (1/7/98) |
| 32 | Television Mast - 1 WTC (1/7/98) |
| 33 | Television Mast - 1 WTC (8/14/95) |
| 34 | Floor Frequency Measurements - 1 & 2 WTC (4/20/95) |
| 35 | Fire Stairs - 1 & 2 WTC (4/28/95) |
| 36 | Accessible Columns - 4 & 5 WTC (4/28/95) |
| 37 | Accessible Columns - 1 & 2 WTC (4/14/95) |
| 38 | Natural Frequency Measurements - 1 & 2 WTC (4/12/95) |
| 39 | Slurry Walls & Slabs at Slurry Walls (4/3/95) |

| ITEM | |
|---|---|
| 40 | Slabs, Partitions, Finishes and Floor Framing - 1 & 2 WTC (4/1/95) |
| 41 | Marble Panels - 1 & 2 WTC (3/13/95) |
| 42 | Marble Panels - 1 & 2 WTC (10/1/97) |
| 43 | Marble Panels - 1 & 2 WTC (8/30/99) |
| 44 | Bracing of 1 & 2 WTC below Elev. 294' – 0" (3/1/95) |
| 45 | Marble Panels - 3, 4, 5 & 6 WTC & Concourse Level (2/22/95) |
| 46 | Hat Truss between Floor 107 & the Roof (2/21/95) |
| 47 | Lobby Ceilings (1/17/95) |
| 48 | Crown Framing Deterioration - 1 & 2 WTC (11/16/94) |
| 49 | Exterior Plaster Soffits - 4, 5 & 6 WTC (11/21/97) |
| 50 | Exterior Plaster Soffits - 4, 5 & 6 WTC (5/28/92) |
| 51 | Concourse Plaster Ceilings - 4 & 5 WTC (5/1/91) |
| 52 | Damper Testing - 1&2 WTC (5/28/96) |
| 53 | Subgrade levels - WTC Facility Condition Survey Report (3/96) |
| 54 | Floor Slabs, Partitions, Column Finishes - 1&2 WTC (12/10/97) |
| 55 | Mechanical Equipment Rooms - 1&2 WTC (5/99) |
| 56 | Mechanical Equipment Rooms - 1&2 WTC (4/12/96) |
| 57 | B5 & B6 Passageway & Storage Area -WTC Subgrade (8/12/97) |
| 58 | Concrete Slabs, Partitions Column Finishes & Floor Framing over Tenant Spaces -1&2 WTC (6/28/96) |
| 59 | WTC Spray Fire Protection Tower Spandrels & Diagonals (10/1/96) |
| 60 | Tower Subgrade Levels WTC Facility Condition Survey Report (3/96) |
| 61 | WTC River Pump Station, U.S. Customs House Soffit, Plaza Level Slab & Concourse Level Ceiling Facility Condition Survey Reports (6/96) |
| 62 | Northeast & Southeast Plaza Buildings Facility Condition Survey Report(11/95) |

| ITEM | | |
|---|---|---|
| | 63 | Northeast & Southeast Plaza Buildings Facility Condition Survey Report (9/94) |
| | 64 | Report on WTC Sidewalks (MEDD Architects 7/2 7/99) |
| | 65 | WTC Subgrade Parking Garage Slabs (1/00) |
| | 66 | 1,2,4 & 5 WTC, Floor Framing (11/29/99) |
| | 67 | 4 & 5 WTC, Mechanical Equipment Rooms (10/99) |
| | 68 | 1 WTC, Pedestrian Access Bridges (9/28/99) |
| | 69 | 4 & 5 WTC, Cantilever Trusses & Exterior Plaster Soffits (9/99) |
| | 70 | 1 & 2 WTC, Floor Framing Inspection, Action Memo 1 (8/23/99) & Action Memo 2 (9/8/99) |
| | 71 | 4 & 5 WTC, Floor Framing - Action Memo 1 (8/10/99) |
| | 72 | 6 WTC Exterior Plaster Soffits (7/16/99) |
| | 73 | 1 WTC, Natural Frequency Measurements (7/11/00) |
| | 74 | 1 & 2 WTC, Crown Framing (6/30/99) |
| J | FACADES | |
| | 1 | Curtainwall - 1&2 WTC (Facades) |
| | 2 | Curtainwall and Roof Inspection - 1&2 WTC (10/29/99) |
| | 3 | Curtainwall - 4&5 WTC (Facades) |
| | 4 | Curtainwall and Roof Inspection - 4&5 WTC (4/28/95) |
| | 5 | Curtainwall and Roof Inspection - 4&5 WTC (10/9/98) |
| | 6 | 1996 Structural Integrity Inspections - 1&2 WTC Facades |
| | 7 | 1997 Structural Integrity Inspections - 1&2 WTC Facades |
| | 8 | 1998 Structural Integrity Inspections - 1&2 WTC Facades |
| | 9 | Curtainwall reinspection 10% (10/29/99) |
| K | MECHANICAL REPORTS/INFORMATION | |
| | 1 | Maintenance Management Evaluation (6/99) |
| | 2 | Steam trap evaluation report (8/6/99) |

| ITEM | | |
|---|---|---|
| 3 | Lucius Pitkin's Eddy Current Survey | |
| | a. | York Centrifugal Unit 2 (6/22/98) |
| | b | York Centrifugal Unit 3 (6/22/98) |
| | c | York Centrifugal Unit 5 (6/22/98) |
| | d | York Centrifugal Unit 6 (6/22/98) |
| | e | York Centrifugal Unit 1, 4 & 7-condensers and York Centrifugal Units 2, 3, 4-chillers (6/30/99) |
| | f | York Centrifugal Units 8, 9, 10, 11 & 12-condensers (7/21/99) |
| 5 | Summary memo of WTC River Water Lines (9/6/00) | |
| 6 | WTC 1,2,4,5 & Subgrade Air Handling Unit Rehabiliation (set of drawings) (5/13/98) | |
| L | VERTICAL TRANSPORTATION PROFILE & INSPECTION REPORTS | |
| 1 | Elevators | |
| | a. | 1 WTC (Cars 1-99) |
| | b | 2 WTC (Cars 1-99) |
| | c | 4 WTC (Cars 1-12) |
| | d | 5 WTC (Cars 1-9) |
| | e | Subgrade Cars-1WTC (P1, J1-J4) |
| | f | Subgrade Cars-2WTC (K1-K5) |
| | g | 4WTC (FE1-FE4) |
| 2 | Escalators | |
| | a. | 1 WTC: A1-A8 |
| | b | 2 WTC: B1 - B14 |
| | c | S.E. Plaza (E14-E15) |
| | d | N.E. Plaza (E1-E13) |
| | e | PATH Escalators: P1-P11; P24; P27-P29 |
| | f | Mall Escalators: E1, E2, E11-15, E17 |

| ITEM | | |
|---|---|---|
| 3 | Controller Manual s & Prints for Modernized Elevator Cars | |
| | a | ACE Elevator Co. CEC Futura Manual PA Contract #WTC 838.071, SEP Bldg. 4 Cars 1-6 |
| | b | ACE Elevator Co. CEC Futura Manual Contract #WTC 838.071, SEP Bldg. 4 Cars 7-12 |
| | c | ACE Elevator Co. CEC Futura Manual Contract #WTC 838.071, SEP Bldg. 5 Cars 1-6 |
| | d | ACE Elevator Co. CEC Futura Manual & Diagram for Cars 12B, 13B PA Contract #WTC 846.071 |
| | e | ACE Elevator Co. CEC Futura Manual Contract #WTC 845.071 SEP Bldg. 1 Cars 24A-29A |
| | f | ACE Elevator Co. CEC Futura Manual PA Contract #WTC 845.071, Bldg. 1 Cars 30A-35A |
| | g | ACE Elevator Co. Futura Manual & Magnetek DSD412 Manual Contract WTC 845.071, Bldg. 1 Cars 36A-41A |
| | h | ACE Elevator Co. CEC Futura Manual PA Contract #WTC 845.071, Bldg. 2 Cars 51A-56A |
| | i | ACE Elevator Co. Futura and Magnetek DSD412 Manual, Bldg. 1 Cars 87A-92A |
| | j | ACE Elevator Co. Controller Diagram for cars #93A-98A, PA Contract #WTC-845.071 |
| | k | ACE Elevator Co. CEC Futura Manual PA Contract #WTC 845.071, 14 & 15A |
| | l | A.C.E. Elevator Co. Inc., Swift Futura, CEC Job No. 3331 cars 14A, 15A 1WTC Velocity/Fault Controller (1/29/9_) |
| | m | WTC Car 6B Setup Parameters |
| | n | A.C.E. Elevator Co. Inc., Swift Futura, CEC Job No. 2670 car 6B 2WTC Velocity/Fault Controller (4/18/95) |
| | o | Schematic Drawings, 2WTC-A.C.E. Elevator (Shuttle Cars) Job No. 3172, Cars 12B, 13B (3/20/97) |
| 4 | VDA Studies on WTC Elevator Fleet | |
| | a | Elevator door study (12/16/99) |

| ITEM | | |
|---|---|---|
| | b | Examination of 1 WTC elevators 18-23 (5/11/00) |
| | c | Examination of 1 WTC elevators 1A-5A & 8A-11A (8/21/00) |
| | d | Examination of 2 WTC elevators 57B-62B & 87-92 (8/8/00) |
| | e | Examination of 2 WTC elevators 24B-29B (8/2/00) |
| | f | Examination of 2 WTC elevators 42B-47B (7/12/00) |
| | g | Examination of 2 WTC elevators 51B-56B (7/12/00) |
| | h | Examination of 2 WTC elevators 63B-68B (8/21/00) |
| | i | Examination of 2 WTC elevators 81B-86B (8/2/00) |
| | j | Examination of 2 WTC elevators 93B-98B (8/2/00) |
| | k | Examination of 1 WTC elevators 12A-17A (12/16/99) |
| | l | Examination of 1 WTC elevators 12A-17A (5/11/00) |
| | m | Examination of 2WTC elevators 1B-5B & 8B-11B (6/28/00) |
| | n | Examination of 2 WTC elevators 12B-17B & 18B-23B (8/21/00) |
| M | ELECTRICAL REPORTS | |
| 1 | Operations Services Department Inspection & Safety Division evaluation of the electrical maintenance program at WTC (2/99) | |
| 2 | Burlington Engineering Co. Thermographic Scanning NE & SE Plaza buildings (3books) (8/8/96) | |
| 3 | Burlington Engineering Co. Thermographic Scanning Subgrade levels including "A" Tower (6/17/96) | |
| 4 | Burlington Engineering Co. Thermographic Scanning "B" Tower (2 books) (8/8/96) | |
| 5 | Burlington Engineering Co. Thermographic Scanning "A" Tower (8/8/96) | |
| 6 | Electrical Capacity Upgrades Summary | |
| | | |
| N | BLAST RELATED REPORTS/INFORMATION | |

| ITEM | | |
|---|---|---|
| | 1 | WTC Explosion and Fire Environmental Investigation and Assesment Report |
| | 2 | Summary of Structural repairs as a result of February 26, 1993 Explosion (2 copies of 10 drawing sets) |
| | 3 | York Water Chiller System Post Blast Equipment Analysis |
| | 4 | Letter from Fire Department Attesting to Post-Bomb Adequacy of Life Safety Systems |
| | 5 | Description/Status of Fire System CADD |
| O | LIFE SAFETY CODE ANALYSIS (11/94) | |
| | 1 | ADA Transition Plan |
| | 2 | Contract WTC-799.56A Fire Safety Director Service 1,2,4 & 5 WTC |
| | 3 | Contract WTC-799.610 Maintenance of Office Space Security System Software at the WTC |
| | 4 | New Fire Alarm System description & status |
| P | TENANT CONSTRUCTION GUIDELINES | |
| | 1 | Tenant Construction Review Manual |
| | 2 | Fire Alarm Guidelines |
| | 3 | Electrical Communication |
| | 4 | HVAC, Plumbing & Fire Protection |
| | 5 | Architectural & Structural |
| | 6 | Pro Forma Applications |
| Q | MAPS & DRAWINGS | |
| | 1 | Tenant Location Plans / Space Book Plan |
| | 2 | Architectural Drawings of Property (10 CD-rom) |
| | 3 | Above-Grade Survey |
| | 4 | Detailed Retail Drawings |
| | 5 | Detailed Retail Drawings (4 CD-rom) |
| | 6 | CADD Drawings of the Subgrade |

| ITEM | | |
|---|---|---|
| | 7 | Highly Illustrative Subgrade Drawings |
| | 8 | Subgrade Drawings (4 CD-rom) |
| | 9 | Parking Map |
| | 10 | Damage Map Pertaining to the Acquisition of Certain Real Property by the PA for WTC |
| | 11 | Base Building One-Line System Drawing |
| | 12 | Stack Plans |
| R | PUBLIC SPACE RENOVATION MASTER PLAN | |
| | 1 | Davis, Brody& Associates World Trade Center Master Plan |
| | 2 | Renovation Development Proposal (LaSalle Partners) |
| | 3 | Renovation Development Proposal (The O'Conner Group) |
| | 4 | Renovation Development Proposal (LCOR/The Hahn Company) |
| | | a. Volume 1: Development Team (2/1/95) |
| | | b Volume 2: Base Design Concept (2/1/95) |
| | | c Volume 3: Development, Management and Operating Proposal (2/1/95) |
| | | d Volume 4: Financial Proposal (2/1/95) |
| | | e Volume 5: Alternative Proposal (2/1/95) |
| | | f Volume 6: Design Concept, Retail Plan, and Events Presentation (2/16/95) |
| | | g Revised Proposal |
| | 4 | WTC Preliminary Study to Reduce Plaza Windiness |
| | 5 | WTC Plaza Stone Site Investigation |
| | 6 | Smoke Management Design Criteria |
| | 7 | Life Safety Systems & Emergency Evacuation |
| | 8 | Halcyon Report, Area Worker and Visitor Survey |
| S | AGREEMENTS | |
| | 1 | Agreements/Memorandums of Understanding |

| ITEM | | |
|---|---|---|
| | a. | Union Agreements |
| | b | Power Authority of the State of New York Agreement |
| | c | Memorandum of Understanding ("MOU") with NYC Fire Department & Amendment |
| | d | MOU with NYC Building Department |
| | e | Agreement between the PA and NYC Pertaining to Certain Street Closings and a Change in the City's Waterfront Plan to Accommodate Certain Landfills being Created in Connection with the Development of WTC (6/67) |
| | f | Agreement between the PA and NYC Pertaining to Certain Street Closings in Connection with the Development fo WTC (1/68) |
| | g | Agreement between NYC, Fisher Liberty Co. and the PA Pertaining to the Liberty Street Pedestrian Bridge (8/76) |
| | h | Agreement between NYC and the PA Pertaining to the Liberty Street Underpass (5/12/80) |
| | i | Agreement between NYC and the PA Pertaining to the Dey Street Underpass (5/80) |
| | j | Settlement Agreement among NYC WTC7, and the PA Pertaining to the Vesey Street Deck (4/84) |
| T | LEGAL INFORMATION | |
| 1 | Pending Litigation Materials | |
| | a | Summons dated 11/10/99 with Dean Witter Reynolds Inc. against The Fund for Regional Development and Port Authority of New York and New Jersey (Index No. 605118/99) |
| | b | Answer dated 5/25/00 regarding Summons with Dean Witter Reynolds Inc. against The Fund for Regional Development and Port Authority of New York and New Jersey (Index No. 605118/99) |
| | c | Summons dated 1/7/00 with Guy Carpenter and Company Inc. against The Fund for Regional Development and Port Authority of New York and New Jersey (Index No. 600091/00), together with Complaint dated 12/29/99 attached thereto |
| 2 | Commonwealth Land Title Insurance Co. Documentation | |

| ITEM | | |
|---|---|---|
| | a. | Title Commitment |
| | b | Copies of Recorded Easements and other Exceptions to Title |
| | c | Easement Agreement among PA, PATH, BPCD and BPCA (9/81) and Amendments thereto (2/82, 1/84) |
| | d | Letter from R. Gochfield, Dept. of City Planning, City of NY to H. Barr, PANYNJ re: Proposed Change in City Map for the WTC, with attached surveys |
| U | INTELLECTUAL PROPERTY INFORMATION | |
| 1 | Schedule of Patents, Trademarks, Tradenames and Copyrights Held or Used and Documentation Relating to Related Claims | |
| | | |
| V | MISCELLANEOUS | |
| 1 | Engineering Department Professional and Technical Service Firm Rosters for the Architectural, Electric, Environmental, Mechanical and Structural Disciplines | |
| 2 | World Trade Center Tenant Manual | |
| 3 | PA Comprehensive Annual Financial Report for the Year ended 12/31/99 | |

# ATTACHMENT 4

World Trade Center-Proposed 2001 Capital Plan

# WTC TRADE CENTER - PROPOSED 2001 CAPITAL F ROUGH BREAKDOWN BY BUILDING

*($'s in thousands)*

| Proj Title | 2001 | Bldg 1 | Bldg 2 | Bldg 4 | Bldg 5 | Retail Mall | Subgrade | Central Sys |
|---|---|---|---|---|---|---|---|---|
| **Electrical & HVAC Capacity Upgrade** | | | | | | | | |
| HVAC Distribution System Rehabilitation | 1,000 | 400 | 400 | 100 | 100 | | | |
| 1 WTC 3d Zone Electrical & HVAC Capacity | 1,000 | 1,000 | | | | | | |
| HVAC Control System/Smoke Mgmt | 1,000 | | | | | 1,000 | | |
| HVAC Distribution Capacity Upgrade | 2,500 | | 2,500 | | | | | |
| Freeze Protection Systems | 1,000 | 1,000 | | | | | | |
| Plaza Bldg Electrical Capacity Upgrade | 2,000 | | | 1,000 | 1,000 | | | |
| **New Fire Alarm System** | | | | | | | | |
| Fire Alarm System Phase 3 - PA Work | 8,000 | 2,000 | 2,000 | 500 | 500 | | 3,000 | |
| Fire Alarm System Phase 3 - Tenant Reimb | 250 | 100 | 100 | | 50 | | | |
| **Other Building Systems Upgrades** | | | | | | | | |
| Operations Control Center | 500 | | | | | | | 500 |
| Tenant Standby Power | 2,000 | | | | | | | 2000 |
| Substation Ground Fault Protection | 500 | | | | | | | 500 |
| Antenna & Mast Rehabilitation Projects | 500 | 500 | | | | | | |
| Building Mgmt/Energy Mgmt Systems | 500 | | | | | | | 500 |
| **Common Area Improvement Programs** | | | | | | | | |
| Public Space Code Improvements | 2,500 | | | | | 2,500 | | |
| Public Space Infrastructure Improvements | 3,000 | | | | | 3,000 | | |
| Mall Circulation Improvements Phase 2 | 500 | | | | | 500 | | |
| Priority Customer Service Improvements | 4,000 | 500 | 500 | | | 3,000 | | |
| **Subgrade Rehabilitation Programs** | | | | | | | | |
| Subgrade Slab Rehabilitation Phase 1 | 10,000 | | | | | | 10,000 | |
| Subgrade Slab Rehabilitation Phase 2 | 500 | | | | | | 500 | |
| Subgrade Code Upgrade Projects | 500 | | | | | | 500 | |

# TRADE CENTER - PROPOSED 2001 CAPITAL F ROUGH BREAKDOWN BY BUILDING

*($'s in thousands)*

| Proj Title | 2001 | Bldg 1 | Bldg 2 | Bldg 4 | Bldg 5 | Retail Mall | Subgrade | Central Sys |
|---|---|---|---|---|---|---|---|---|
| **Security Programs** | | | | | | | | |
| Permanent Security Project | 500 | | | | | | | 500 |
| Office Space Security System | 500 | | | | | | | 500 |
| Security Modernization Projects | 5,000 | | | | | | | 5,000 |
| **Elevator and Escalator Modernization Programs** | | | | | | | | |
| Elevator Control Modernization - Tower 1 | 3,500 | 3,500 | | | | | | |
| Elevator Control Modernization - Tower 2 | 3,500 | | 3,500 | | | | | |
| Plaza Bldg Elevator Control Modernization | 500 | | | 250 | 250 | | | |
| Asbestos Abatement Shuttle Shafts | 500 | 500 | | | | | | |
| Elevator Disconnect Switches | 1,000 | 500 | 500 | | | | | |
| **Tenant Space Prep/Landlord Work Projects** | | | | | | | | |
| Lease Obligated Capital Work | 2,000 | 750 | 750 | | | 500 | | |
| Multi-Tenant Floor Corridor & Restrm Rehab | 3,000 | 1,000 | 1,000 | | | 1,000 | | |
| **Building Infrastructure Rehabilitation Programs** | | | | | | | | |
| Priority Capital Major Work Projects | 500 | | | | | | | |
| Capital Major Work Projects | 5,000 | 1,000 | 1,000 | | | | | 2,000 |
| Other Asbestos Abatement | 500 | | 250 | 250 | | | | |
| ADA Projects | 250 | | | | | 125 | 125 | |
| **GRAND TOTAL** | 68,000 | 12,750 | 12,500 | 2,100 | 1,900 | 11,625 | 14,125 | 11,500 |

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# ATTACHMENT 5

World Trade Center-Proposed 2002-2005 Capital Plan

## WORLD TRADE CENTER - PROPOSED 2002-2005 CAPITAL PLAN - ROUGH BREAKDOWN BY BUILDING

*($'s in thousands)*

| Proj Title | 2002 | 2003 | 2004 | 2005 | 2002-2005 | Bldg 1 | Bldg 2 | Bldg 4 | Bldg 5 | Retail Mall | Subgrade | Central Sys |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Electrical & HVAC Capacity Upgrade** | | | | | | | | | | | | |
| HVAC Control System/Smoke Mgmt | 2,000 | 3,000 | 5,000 | 5,000 | 15,000 | 2,500 | 2,500 | | | | | 10,000 |
| HVAC Distribution Capacity Upgrade | 2,000 | 2,000 | 3,000 | 3,000 | 10,000 | 2,000 | 4,000 | | | | | 4,000 |
| Freeze Protection Systems | 1,000 | 1,000 | 1,000 | 1,000 | 4,000 | 1,000 | 3,000 | | | | | |
| Plaza Bldg Electrical Capacity Upgrade | 2,000 | 2,000 | 2,000 | 2,000 | 8,000 | | | 3,000 | 3,000 | | | 2,000 |
| **New Fire Alarm System** | | | | | | | | | | | | |
| Fire Alarm System Phase 3 - PA Work | 8,000 | 4,000 | 0 | 0 | 12,000 | | | | | | 10,000 | 2,000 |
| Fire Alarm System Phase 3 - Tenant Reimb | 250 | 0 | 0 | 0 | 250 | 100 | 100 | 50 | | | | |
| **Other Building Systems Upgrades** | | | | | | | | | | | | |
| Operations Control Center | 500 | 500 | 500 | 500 | 2,000 | | | | | | | 2,000 |
| Tenant Standby Power | 2,000 | 2,000 | 2,000 | 2,000 | 8,000 | | | | | | | 8,000 |
| Antenna & Mast Rehabilitation Projects | 500 | 500 | 500 | 500 | 2,000 | 2,000 | | | | | | |
| Building Mgmt/Energy Mgmt Systems | 1,000 | 1,000 | 2,500 | 2,500 | 7,000 | | | | | | | 7,000 |
| **Common Area Improvement Programs** | | | | | | | | | | | | |
| Public Space Code Improvements | 2,000 | 2,000 | 2,000 | 2,000 | 8,000 | | | | | 8,000 | | |
| Public Space Infrastructure Improvements | 5,000 | 5,000 | 5,000 | 5,000 | 20,000 | | | | | 20,000 | | |
| Mall Circulation Improvements Phase 2 | 2,000 | 5,000 | 6,000 | 5,000 | 18,000 | | | | | 18,000 | | |
| Priority Customer Service Improvements | 3,000 | 3,000 | 3,000 | 3,000 | 12,000 | 2,000 | 2,000 | 1,000 | 1,000 | 6,000 | | |
| **Subgrade Rehabilitation Programs** | | | | | | | | | | | | |
| Subgrade Slab Rehabilitation Phase 1 | 6,000 | 0 | 0 | 0 | 6,000 | | | | | | 6,000 | |
| Subgrade Slab Rehabilitation Phase 2 | 1,000 | 5,000 | 5,000 | 5,000 | 16,000 | | | | | | 16,000 | |
| Subgrade Code Upgrade Projects | 1,000 | 1,000 | 1,000 | 1,000 | 4,000 | | | | | | 4,000 | |

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## WORLD TRADE CENTER - PROPOSED 2002-2005 CAPITAL PLAN - ROUGH BREAKDOWN BY BUILDING

*($'s in thousands)*

| Proj Title | 2002 | 2003 | 2004 | 2005 | 2002-2005 | Bldg 1 | Bldg 2 | Bldg 4 | Bldg 5 | Retail Mall | Subgrade | Central Sys |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Security Programs** | | | | | | | | | | | | |
| Office Space Security System | 250 | 250 | 250 | 250 | 1,000 | 400 | 400 | 100 | 100 | | | |
| Security Modernization Projects | 3,000 | 3,000 | 3,000 | 3,000 | 12,000 | | | | | | | 12,000 |
| **Elevator and Escalator Modernization Programs** | | | | | | | | | | | | |
| Elevator Control Modernization - Tower 1 | 3,500 | 3,500 | 3,500 | 3,000 | 13,500 | 13,500 | | | | | | |
| Elevator Control Modernization - Tower 2 | 3,500 | 3,500 | 3,500 | 3,000 | 13,500 | | 13,500 | | | | | |
| Asbestos Abatement Shuttle Shafts | 500 | 500 | 500 | 500 | 2,000 | 1,500 | 500 | | | | | |
| Elevator Disconnect Switches | 500 | 0 | 0 | 0 | 500 | 250 | 250 | | | | | |
| **Tenant Space Prep/Landlord Work Projects** | | | | | | | | | | | | |
| Lease Obligated Capital Work | 2,000 | 3,000 | 3,000 | 3,000 | 11,000 | 4,000 | 4,000 | 1,000 | 1,000 | 1,000 | | |
| Multi-Tenant Floor Corridor & Restrm Rehab | 3,000 | 3,000 | 3,000 | 2,000 | 11,000 | 4,500 | 4,500 | 1,000 | 1,000 | | | |
| **Building Infrastructure Rehabilitation Programs** | | | | | | | | | | | | |
| Priority Capital Major Work Projects | 500 | 500 | 500 | 500 | 2,000 | | | | | | | 2,000 |
| Capital Major Work Projects | 5,000 | 5,000 | 5,000 | 5,000 | 20,000 | 2,000 | 2,000 | 500 | 500 | | | 15,000 |
| Other Asbestos Abatement | 500 | 500 | 500 | 500 | 2,000 | 600 | 600 | 150 | 150 | | 500 | |
| ADA Projects | 250 | 250 | 250 | 250 | 1,000 | 100 | 100 | | | 800 | | |
| **GRAND TOTAL** | 61,750 | 60,000 | 61,500 | 58,500 | 241,750 | 36,450 | 37,450 | 6,800 | 6,750 | 53,800 | 36,500 | 64,000 |

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# ATTACHMENT 6

R.W. Crandlemere & Associates Environmental Site Assessment Phase I Report
(Separate binder)

# ATTACHMENT 7

BOCA Group International, Overall Observation

BOCA GROUP
INTERNATIONAL, INC.
VERTICAL TRANSPORTATION CONSULTING

December 5, 2000

Mr. Robert Weiland
Merritt & Harris
110 East 42nd Street
Suite 1200
New York, NY 10017-5685

RE: ONE, TWO, FOUR & FIVE WORLD TRADE CENTER
OVERALL OBSERVATION

Dear Mr. Weiland:

Our engineers performed a visual observation and reviewed contracts and documentation, as listed below, of the elevators at the above referenced projects. The elevators and escalators were observed on a "specimen sample" basis. A few units from each building were observed, and these were broken down into units where the "complete modernization" was finished and units where modernization had not been performed as of November 1, 2000. According to the specifications, the modernization is being performed in two phases, the Overlay Modernization Phase and Complete Modernization Phase.

**List Of Documents Reviewed**

We also reviewed a few documents at the Port Authority Vertical Transportation Office. The following is a list of the documents we observed:

1. World Trade Center Property Book
2. Offering Memo
3. The Port Authority of NY and NJ
    - The World Trade Center Contract WTC – 845-071 "Modernization of Elevators, Dumbwaiters and Escalators @ One World Trade Center" March 1994
    - The World Trade Center Contract WTC – 838-071 "Modernization of Elevators and Escalators @ Four and Five World Trade Center" September 1993
    - The World Trade Center Contract WTC – 846-071 "Modernization of Elevators and Escalators @ Two World Trade Center" March 1994



200 PARK AVENUE • NEW YORK, NY 10166
TELEPHONE (212) 983-7010 • FAX (212) 983-7011 • E-MAIL info@bocagroup.com
www.bocagroup.com

- Maintenance Contract for World Trade Center - 799.700 Maintenance.

4. VDA Maintenance Surveys
   i. dated June 14, 2000 (Elevators 1A – 5A, & 8A – 11A
   ii. dated August 2, 2000 ( WTC tower "B" Local Elevator nos. 63, 64,65,66,67 & 68)
   iii. dated August 21, 2000 (Elevators 81B – 86B)
   iv. dated October 16, 2000 (Elevators 75B – 85B in Two WTC)

5. Correspondence dated October 17, 2000 from the Port Authority to ACE Elevator Company.

6. Monthly callback summaries on elevators with greater than two outages (April, May, June, August, September and November, 1999; January –May 2000 and July –October 2000) for One World Trade Center and Two World Trade Center.

7. OCC DECK Reports dated 10/16/00 and 11/1/00.

**FORM OF REPORT:**

Following this overall observation, is a summary of the scope of work included in the modernization of the elevators located within the World Trade Center.

A status of the elevator modernization program follows the overall observations. The sub-grade units are listed immediately following the status report, which is followed by a listing of the tenant units and the retail units that we observed in the layout drawings.

A section discussing the current maintenance being performed follows the previously described sections.

Detailed reports on the individual buildings follow the status of the elevator modernization. These reports describe the equipment that we observed and also list information that we gleaned from the documents that we reviewed.

At the end of each section are the traffic calculations and analyses for the various buildings. Please note that these calculations do not include any of the tenant owned and operated elevators

The following sections include reports for the individual buildings.

## GENERAL NOTES

The four buildings have a total of 238 elevators 126 of them have been modernized, 8 already in progress and 104 not yet started but scheduled for a future date. Most of the modernized elevators have SCR Drives with CEC Swift Futura Controllers, door operators retrofitted with solid state controls to interface with the new controllers all

giving the elevator better service and a better quality ride. All passenger elevators have had cab refurbishing, all but two are ADA compliant.

Due to a previous elevator incident at Two World Trade Center elevators 18-23B were excluded from our inspection.

Five tenant owned and operated elevators were not observed and form part of this report by reference only.

Upon inspection of the hoistway we observed the hoistway doors are fire rated with UL certification labels. To provide a statement on the hoistway walls being fire rated, a sampling would be necessary. This was not performed during our inspection which was of a visual nature.

All Escalators have been modernized with start/stop switch, comb plate switch, demarcation lights, caution signs, controlled descent devices, remote monitoring system, Carl White device (new for every device).

The PATH Escalators are excluded from the scope of this report.

## SPECIAL ELEVATOR FEATURES

Track and saddle inserts have been installed predominately in tower shuttles and D Bank reducing friction between saddle and gibs minimizing stack effect problems on elevators.

Buildings One World Trade Center and Two World Trade Center provide a warning device, located on the 108 Floor, which rates the wind sway that automatically reduces the speed of the elevators to prevent possible damages. Accordingly, the shuttle elevators have the ability to have speed reduced automatically from 1600 Feet Per Minute to 1000 Feet Per Minute whenever strong wind conditions are observed and a warning system is activated as described below.

In buildings One World Trade Center and Two World Trade Center, elevators Nos. 14 and 15 have hoistway wall roller followers, which have proven to be successful in minimizing wall erosion due to rope contact. The followers are installed on all the high-rise shuttles, elevator Nos. 6 and 7 in each tower.

In all buildings the elevators can be recalled down to their respective lobbies via the elevator start consoles.

We hope you find this report useful in the due diligence analysis of the aforementioned properties. If you have any questions, please call the undersigned at (212) 983-7010

Sincerely,

BOCA Group International, Inc.,

Vish Shetty

## Elevator Modernization – Summary of Scope of Work
## (As of 11/1/2000)

### Shuttle Elevators

Removal of existing equipment, designing, fabricating, delivering and installing an operating overlay prior to ordering full modernization.

Removal of existing equipment, designing, fabricating, delivering and installing a complete modernized elevator.

Remove existing motor generator, design, deliver and install new silicone controlled rectifier (SCR) power conversion units.

Design, fabricate, deliver and install revised emergency power operation line starter selection.

Removal of existing hall call fixture and designing, fabricating, delivering, and installing of a new hall call fixture.

Removal of existing hall lanterns and designing, fabricating, delivering and installing of new hall lanterns.

Removal of existing jamb markers and designing, fabricating, delivering and installing of new jamb markers.

Design, fabricate, deliver and install new car to lobby (CTL) key switch with updated wiring changes.

### Local Elevators

Removal of existing equipment, designing, fabricating, delivering and installing an operating overlay prior to ordering full modernization.

Removal of existing equipment, designing, fabricating, delivering and installing a complete modernized elevator including SCR drives and microprocessor based controllers.

Design, fabricate, deliver and install new car to lobby (CTL) key switch with updated wiring changes.

Design, fabricate, deliver and install revised emergency power operation line starter selection.

Removal of existing hall call fixture and designing, fabricating, delivering and installing of a new hall call fixture.

Removal of existing hall lanterns and designing, fabricating, delivering and installing of new hall lanterns.

Removal of existing jamb markers and designing, fabricating, delivering and installing of new jamb markers.

## Freight Elevators

Removal of existing equipment, designing, fabricating, delivering and installing an operating overlay prior to ordering full modernization.

Removal of existing equipment, designing, fabricating, delivering and installing a complete modernized elevator including SCR drives and microprocessor based controllers.

Removal of existing door protective devices and designing, fabricating, delivering and installing of door protective devices.

Provide new freight elevator hall lanterns at each landing served. This includes designing, fabricating, delivering and installing new hall lanterns.

Removal of existing jamb markers and designing, fabricating, delivering and installing of new jamb markers.

# Status of WTC Elevator Modernization Program

(as of 11/1/2000)

| | 1 WTC | | |
|---|---|---|---|
| | Complete | In Progress | Future |
| Local | 56 | 3 | 13 |
| Low-Rise | 0 | 0 | 8 |
| High-Rise | 6 | 0 | 7 |
| Freight | 2 | 0 | 4 |

| | 2 WTC | | |
|---|---|---|---|
| | Complete | In Progress | Future |
| Local | 37 | 2 | 33 |
| Low-Rise | 0 | 0 | 8 |
| High-Rise | 6 | 2 | 5 |
| Freight | 1 | 0 | 5 |

| | 4 WTC | | |
|---|---|---|---|
| | Complete | In Progress | Future |
| Local | 11 | 0 | 1 |
| Freight | 0 | 0 | 2 |

| | 5 WTC | | |
|---|---|---|---|
| | Complete | In Progress | Future |
| Local | 7 | 1 | 1 |
| Freight | 0 | 0 | 2 |

| SUBGRADE | | |
|---|---|---|
| Complete | In Progress | Future |
| 0 | 0 | 15 |

# SUB-GRADE ELEVATORS

## ELEVATORS SERVING SUB-GRADE ONLY

| ELEVATOR | FLOORS SERVED |
|---|---|
| K2 | Front: B1<br>Rear: B4, B5, B6 |
| K1 | 1, B1 |
| FE5 | B1-B3 |
| FE8 | 43-44 |
| J4 | 1, B1 |
| FE1 | B2, B1, 1 |
| FE2 | B2, B1, 1 |
| FE3 | B1, 1, 2-9 |
| FE4 | B1, 1, 2-9 |

## ELEVATORS SERVING SUB-GRADE IN ADDITION TO OTHER FLOORS

### ONE WORLD TRADE CENTER

ELEVATOR NUMBERS 50, 7, 49, 17, 48, 5, ARMOR CAR, ALL "J" CARS, 36, 41, 42, 47, 35, 30, 29, 24.

### TWO WORLD TRADE CENTER

ELEVATOR NUMBERS 50, 7, 49, 17, 48, 5, ARMOR CAR, ALL "K" CARS, 36, 41, 42, 47, 35, 30, 29, 24.

# TENANT ELEVATORS AND ESCALATORS

## FIVE WORLD TRADE CENTER

| UNIT TYPE | UNIT NUMBER | FLOORS SERVED | # OF UNITS |
|---|---|---|---|
| ESCALATOR | CSE 1 AND CSE 2 | 2 TO 3AND 3 TO 2 | 2 |
| ESCALATOR | NONE | 1 TO 2, 2-3 AND 3-2 | 3 |
| HYDRAULIC ELEVATOR | BORDERS BOOK STORE | 1,2,3 | 1 |
| | | | |

## FOUR WORLD TRADE CENTER

| UNIT TYPE | UNIT NUMBER | FLOORS SERVED | # OF UNITS |
|---|---|---|---|
| ELEVATOR | 1 AND 2 | 1, 3, 4, 5 6 | 2 |
| ELEVATOR | SWISS BANK | NOT AVAILABLE | 1 |

# RETAIL ESCALATORS

We have been informed by the Vertical Transportation Department of the Port Authority of NY and NJ that these units incur unusually high maintenance costs due to high traffic volume and also due to the fact that these escalators are used to transport handcarts and other wheeled carriages.

## ONE WORLD TRADE CENTER

NONE

## TWO WORLD TRADE CENTER

NONE

## FOUR WORLD TRADE CENTER

ESCALATORS NEAR LIBERTY STREET BETWEEN HSBC ATM AND NEWS STANDS (2 UNITS) (E14 AND E15)

ESCALATORS BETWEEN AU BON PAIN (E17 AND E18), VICTORIA'S SECRET AND BATH AND BODY WORKS

## FIVE WORLD TRADE CENTER

CONCOURSE TO PLAZA (E19 AND E20)

ESCALATORS BETWEEN NINE WEST AND TOURNEAU STORES (2 UNITS) (E1 AND E2)

ESCALATORS TO SIX WORLD TRADE CENTER NEXT TO CHOICE COURIER (2 UNITS)

# ELEVATOR MAINTENANCE

We performed a visual inspection of the 21 pre-selected elevators and a few escalators in buildings One, Two, Four, and Five World Trade Center, we have gathered that the equipment has to be closely monitored by the Vertical Transportation Department of the World Trade Department. We have also reviewed maintenance evaluation reports submitted by an independent third party based upon their field observations. These reports indicate deficiency items mostly related to house keeping, some of which remain to be corrected. The indications on the third party reports in reference to the preventive maintenance practices range from "acceptable" to "marginally acceptable" with "definite room for improvement in the area of housekeeping". Nevertheless, it appears from the correspondence we observed and during our general discussions that a great deal of close monitoring and follow up from the Vertical Transportation Department is required for the elevator maintenance company to respond to schedule requests as well as perform preventive maintenance. We understand that the elevator company does not inform the PA about any past problems or future repairs that need to be scheduled as a result of which the problems persist.

Additionally, we reviewed the maintenance callback sheets listed previously after which we performed a visual inspection of additional machine rooms in One World Trade Center and Two World Trade Center. This field visit revealed a large amount of rouged cables and bad machine bearings. The rouged cables are contributing largely to the amount of dust and dirt in the machine room, on the machine room equipment and secondary equipment. This condition will most likely cause contact failures, electrical shorts and other potential hazards to the equipment and its workers. There was a significant amount of bad machine bearings observed which are causing noise and vibration in the machines. If this is not corrected soon more serious damage will be caused to the hoist machines.

It was also noted that a few elevators had temporary jumpers on the controller, which is not a generally accepted practice in the elevator industry and could be potentially dangerous.

The following section describes some of the significant deficiencies that we observed all of which are covered under the full-service maintenance contract in effect.

## SIGNIFICANT MAINTENANCE ITEMS

### ONE WORLD TRADE CENTER

Major Maintenance Items:

1. Excessive dust in all machine rooms observed
2. Rouged cables on Elevators 74, 1, 4, 66, 58, and 60
3. Cables with breaks on Elevators 63 and 64

4. Defective machine bearings on Elevators 72, 46 and 61

Other Maintenance Items:

Elevators Nos. 63 - 68:
Elevator No. 63 - Many breaks in cables.
Elevator No. 64 - Many breaks in cables.
Elevator No. 65 - Relevels many times, Cables are filthy
Elevator No. 66 - Slightly rouging of hoist cables.
Elevator No. 68 - Excessive carbon dust in hoist motor.

Elevators Nos. 57 - 62:
Elevator No. 58 - Cables have excessive rouging - all in machine.
Elevator No. 59 - Carbon dust excessive in hoist machine.
Elevator No. 60 - Rouge in cables
Elevator No. 61 - Vibration in main bearing and excessive carbon dust in machine.

Elevators Nos. 49, 69 - 74:
Elevator No. 49 - Four temporary jumpers on controller. Large amount of dust in hoist machine and motor.
Elevator No. 69 - Excessive rouge dust in hoist machine.
Elevator No. 72 - Bad main bearing - whole machine rocks.
Elevator No. 73 - Rouge dust around and in internal brake.
Elevator No. 74 - Excessive cable rouge - all over and in machine.
Rouge on Machine room floor.

Elevator No. 16 - Cable has broken lay. Secondary rouged cables - rouge all over machine room. We were informed that one of the hoist cables broke, started untwisting and came in contact with metal causing a spark, which started a fire in secondary. Elevator shut down for repairs.

Elevator No. 74 - Cables rouged - Rouge all over machine room.

Elevator No. 72 - Bad main bearing - machine rocks.

Elevator No. 1 - Excessive cable rouging condition and excessive oil on brake pads.

Elevator No. 4 - Excessive cable rouge.

Elevator No. 46 - Bad main bearing and cables are rouged.

## TWO WORLD TRADE CENTER

Major Maintenance Items:

1. Rouged cables on Elevators 8, 9, 63-68 ,72, 2, 7, K5, 26 and 28.
2. Bad machine bearings on Elevators 11, 56, 73 and 26
2. Excessive dust in machine room.

Other Maintenance Items:

Elevators Nos. 1-5:
No. 1 Elevator - Carbon dust in hoist motor - cables rouged all over. Oil on brake pads.
No. 2 Elevator - Cables rouged all over - Pie Plate Selector very noisy.

Elevators Nos. 6, 7, 50 and 99: Carbon dust in all hoist motors
No. 6 Elevator - Oil on brake pads.
No. 7 Elevator - Rouged cables caused excessive rouge deposits all over machine.
No. 49 Elevator - Jumper on controller, rouge all in controller, carbon dust excess in hoist motor.

Elevators Nos. 12 - 17: Dust in all machines
Elevator No. 16 - Excess carbon dust in hoist motor & rouge on drive sheaves.
Elevator No. 14 - Car oil seepage in main bearing sheave side

Elevators Nos. K3 - K5:
Elevator No. K5 - Rouge on cables - Not bad.

Elevators Nos. 24-29:
Elevator No. 26 - Bad main bearing and cable rouging.
Elevator No. 28 - Cable have rouging - rouge in hoist machine.
Elevator No. 27 - Rouge dust in hoist machine.

Low Rise Shuttles
Elevator No. 8B - Cables rouged causing rouge all over machine room.
Elevator No. 9B - Cables rouged causing rouge all over machine room.
Elevator No. 10B - Low Brushes and rouge all over machine room.
Elevator No. 11B - Bad main bearing and rouge all over machine room.

Elevators Nos. 51 - 56:
Elevator No. 56 - Bad main bearing

Elevators Nos. 57 - 62:
Elevator No. 62 – Full size hoist motor brushes are not in contact with commutator. Many brushes are low.

Elevators Nos. 63 - 68:
Elevator No. 63 - Cables rouged.
Elevator No. 64 - Cables rouged.
Elevator No. 65 - Cables rouged.
Elevator No. 66 - Cables rouged causing rouge all over hoist machine.
Elevator No. 67 - Cables rouged causing rouge all over hoist machine.
Elevator No. 68 - Cables rouged all over, and oil leak in main bearing.

Secondary – There are thick amounts of rouge all over. Generator copper shavings inside and carbon excessive

Elevators Nos. 69 - 74:
Elevator No. 72 - Car cables rouged; rouge all over machine room.
Elevator No. 73 - Main bearing real bad, whole machine shakes.

## MAINTENANCE ITEMS

The two OCC Deck reports show many long outstanding maintenance items, some dating as far back as March 2000. This is indicative of poor response from the elevator company.

## CALLBACKS

The following charts summarize the callback information that was provided to us as indicated in item #6 under the list of documents reviewed.

A review of the charts will indicate an excessive amount of callbacks on both old units and new units. Although all callbacks may not be attributed to poor maintenance, they are a good indicator of preventive maintenance and while difficult to eliminate totally, can be minimized with a good maintenance program in place. The excessive callbacks shown on the charts for some units are especially unacceptable on the modernized elevators. (The average number of callbacks (>2 only) for new units (for 15 months) is 5.75 for One World Trade Center and 3.45 for Two World Trade Center). As per one of the major elevator manufacturers and installers, an acceptable shutdown frequency for a controller related problem would be one per year per elevator.

| ELEVATORS WITH >2 CALLBACKS | | | | | | |
|---|---|---|---|---|---|---|
| MONTH | ONE WORLD TRADE CENTER | | | TWO WORLD TRADE CENTER | | |
| | OLD UNITS | NEW UNITS | TOTAL | OLD UNITS | NEW UNITS | TOTAL |
| Apr-99 | 73 | 9 | **82** | 48 | 3 | **51** |
| May-99 | 45 | 13 | **58** | 58 | 14 | **72** |
| Jun-99 | 58 | 22 | **80** | 34 | 13 | **47** |
| Aug-99 | 29 | 20 | **49** | 17 | 10 | **27** |
| Sep-99 | 20 | 29 | **49** | 36 | 14 | **50** |
| Nov-99 | 34 | 46 | **80** | 40 | 14 | **54** |
| Jan-00 | 21 | 9 | **30** | 32 | 10 | **42** |
| Feb-00 | 34 | 15 | **49** | 18 | 16 | **34** |
| Mar-00 | 34 | 37 | **71** | 51 | 10 | **61** |
| Apr-00 | 16 | 29 | **45** | 31 | 18 | **49** |
| May-00 | 30 | 25 | **55** | 29 | 6 | **35** |
| Jul-00 | 25 | 37 | **62** | 29 | 6 | **35** |
| Aug-00 | 25 | 14 | **39** | 29 | 7 | **36** |
| Sep-00 | 6 | 21 | **27** | 21 | 4 | **25** |
| Oct-00 | 17 | 42 | **59** | 44 | 7 | **51** |
| **TOTAL** | **467** | **368** | **835** | **517** | **152** | **669** |

| TOTAL UNITS WITH >2 CALLBACKS | | |
|---|---|---|
| | ONE WORLD TRADE CENTER | TWO WORLD TRADE CENTER |
| Apr-99 | 15 | 10 |
| May-99 | 11 | 14 |
| Jun-99 | 18 | 11 |
| Aug-99 | 11 | 7 |
| Sep-99 | 8 | 11 |
| Nov-99 | 17 | 14 |
| Jan-00 | 9 | 10 |
| Feb-00 | 13 | 7 |
| Mar-00 | 17 | 12 |
| Apr-00 | 8 | 13 |
| May-00 | 13 | 10 |
| Jul-00 | 10 | 12 |
| Aug-00 | 11 | 8 |
| Sep-00 | 7 | 5 |
| Oct-00 | 13 | 11 |
| | | |

## SECTION V - EXISTING PROPERTY DESCRIPTIONS & CONDITIONS

### A. Overall Project

| | |
|---|---|
| *Building Type* | Retail Shopping Mall |
| *Built-Circa* | 1970 |
| *Certificate of Occupancy* | A Certificate of Occupancy has not been issued by the City of New York because property owned by the Port Authority is not subject to the Building Code of the City of New York. We have observed "Permits to Use or Occupy" issued by the Port Authority for specific work, notably the October 10, 1997, Permit issued following completion of repairs following the 1993 bombing, but the Port Authority did not routinely issue the equivalent of a Base Building Occupancy Certificate until January 1992. In addition, in December 1995, the Port Authority started an optional "Professional Self-Certification" program for alteration work by tenants. The PA has issued "Consent to Occupy" certificates for specific work under this program. |
| *Story Height* | Concourse - 22' 0"<br>Plaza - 15' 0" (with some variations due to grade level at exterior at 4 and 5 WTC)<br>3rd Floor (4 and 5 WTC) 12' 0" |
| *Number of Stories* | 3 (Plus storage and loading at B-1 level) |
| *Height* | The overall height of this component of the complex from Concourse Level to the Plaza deck is approximately 22'. The retail spaces, as defined by the Offering Memorandum, extend upward on the Plaza and 3rd floor levels within the 4 and 5 World Trade Center Buildings. |
| *Total Sq. Ft. (Bldg. Area)* | 614,901 gsf (gross sq. ft.)<br>440,327 rsf (rentable as remeasured by REBNY 1987 Guideline<br>427,448 rsf (May 31, 2000, Rent Roll Sq. Ft.) |

*General Breakdown of Floor Uses*

| Floors | Predominate Uses |
|---|---|
| 3 | Retail and offices |
| Plaza (2) | Retail and public interior and exterior circulation |
| Concourse (1) | Retail and public circulation |
| B-1 | Storage (Loading docks are located at this level but are included in subgrade space) |

*Special Features*

The retail component has direct interior access to NYC subway systems (5 interior access points to 3 separate subway lines) and the interstate PATH mass-transit systems which direct a large volume of pedestrian traffic through the retail concourse on a daily basis. Direct indoor access is also provided to all the office buildings in the complex and the Hotel. An enclosed connecting bridge also links the Mall to the World Financial Center to the west. There is a mix of high-profile national retail chain stores providing a full range of products, including clothing and shoes; books, music and gifts; food and restaurants; banking; and various other services. The mall is the largest retail center in lower Manhattan.

The Plaza has a large central fountain and sculpture as its central focus point. A smaller "Memorial Fountain" commemorating those who lost their lives in the terrorist bombing, is located at the west side of the Plaza between 1 WTC and the Hotel building. The Plaza is the center of a great deal of public activity during the months of good weather, and is the site of musical performances and other staged events that help to generate additional traffic through the retail areas.

*Design Team*

| | |
|---|---|
| Architects | Minoru Yamasaki & Associates<br>Emory Roth & Sons, P.C. |
| Structural Engineer | Worthington, Skilling, Helle & Jackson |
| Mechanical Engineer | Jaros Baum & Bolles |
| Electrical Engineer | Joseph R. Loring & Associates |
| Paving Utilities & Foundations | The Port of New York Authority |

*Recent Renovations*

Tenant Buildout - Ongoing
New Terrazzo Flooring Sections -2000
Plaza Drainage Study and Repairs - 2000
Plaza Benches, Planters, Fountain Benches - 1999
Perimeter Lighting Project - 1999
Liberty Street Sidewalk -1999
New Plaza Granite Surface -1998-1999
Mall Public Area Sprinkler System and Class "E" Fire Alarm System -1998

## B. Project Condition

*Overview*

Overall this component of the complex is in adequate condition for its intended use as a retail shopping mall. Building maintenance is performed under a service contract with ABM with oversight by the Port Authority Operations and Maintenance Management group.

*Site*

The majority of the Plaza, which serves as the roof for the retail mall, was resurfaced in red and gray granite in 1998-99. The membrane waterproofing beneath the old pavement was probed and determined to be functioning well. Some problem leaks are still occurring, particularly near the expansion joints at the base of the Towers and along an expansion joint at the Church Street sidewalk. They are corrected as necessary as part of the ongoing maintenance of the center.

In general the exposed aggregate concrete sidewalks around the site perimeter are sound without tripping hazards, but there has been spalling and cracking over the years that is beginning to lead to an unattractive appearance. A 1999 study of the sidewalk conditions by the Port Authority includes several recommendations for upgrades, however there has been no decision to proceed at this time. Plaza areas outside of the new granite surface have varying degrees of deterioration, however, the repairs have not been implemented pending the coordination of pavement repairs with the possible extension of retail areas under the building overhangs of 4 and 5 WTC. A section of the Plaza concrete under the 4 WTC overhang was in the process of being replaced as of November 1, 2000.

*Structures*

Where they could be seen, the building's structural elements appear to be free from distress, deterioration, settlement, and overloading. Some spray-applied fireproofing has been damaged by Plaza leaks, but this problem is corrected as part of normal maintenance. There is a limited area on the Plaza Level floor in the vacant Alexander's space floor in 4 WTC where floor cracks are in evidence. This should be evaluated as part of the new tenant buildout.

*Building Exteriors*

The building facade appears in fair condition with no active leaks reported. The painted surfaces of the exterior metal elements are beginning to deteriorate. Repainting should be coordinated with painting of the 4 and 5 WTC buildings. There is some scattered impact damage to marble panels at the building perimeter, notably along the Liberty Street side, and some panels that have apparently shifted out of their original position, mostly noticed along the Vesey Street side. A series of studies of the marble panels indicates that there are no immediate dangerous conditions, but that ongoing repairs and monitoring of the panels should continue.

*Roofs*

There are no conventional roof areas over this complex. The Plaza deck is discussed.

*Interiors*

Building common area finishes were originally of good quality and maintenance is adequate for the present tenancy. New tenant buildout over recent years has been very high quality upscale retail space, and the tenants' private expenditure has contributed to an overall impression of a vibrant and successful retail mall. Recent common area upgrades have included the installation of large areas of new terrazzo flooring in the vicinity of 1 and 2 WTC entrances and along the main north/south corridor on the Concourse Level. Two additional small areas of terrazzo installation are scheduled for late 2000 or early 2001. The remaining Mall common areas have original terrazzo and ceramic paver flooring and original lighting in the suspended plaster ceilings. Several developer plans for mall upgrades have been considered over the past few years, but there has been no decision on implementation. Updating common area finishes at this time would be in response to marketing considerations rather than a need to replace failed materials.

*Vertical Transportation*

There are 11 freight elevators serving the Mall areas, which are adequately maintained. Inspections are current. Escalators 1, 2, and 11 - 20 also serve the Mall. These are heavily used, and there is additional wear and tear in evidence that results from escalator use by handcarts.

*HVAC*

The mechanical systems are adequately designed, using brand-name equipment, which provides adequate cooling for the office and retail areas. The freeze protection system for the AHUs and reheat system for the heating hot water system has been abandoned in place. Consideration should be given to removal of the equipment for these systems. The equipment has been well maintained, most equipment is original (30 years old), and has exceeded its published service life. Replacement should be phased over the next 10 years. Equipment or component replacement is performed as part of the ABM service contract. A project to address the control of smoke potentially generated in the PATH system tracks, has been planned and budgeted.

*Plumbing*

The plumbing systems appear to be in generally good condition and are reportedly functioning satisfactorily. Although in operation, replacement of the pumps and water heaters should be anticipated over the next 10 years. Equipment or component replacement is performed as part of the ABM service contract.

*Electrical*

The electrical systems are reportedly functioning satisfactorily. Systems are tied in with 4 and 5 WTC. They provide adequate electrical capacity.

*Life Safety*

The life safety systems are typical for office/retail areas. The sprinkler system is a recent installation, completed in 1999. A new fire alarm system is currently being installed.

*Property Maintenance*

Electrical, HVAC, and general maintenance is performed under the terms of a service contract by ABM Engineering with oversight by the Port Authority World Trade Department's Building Services Management Division. In general maintenance appears to be adequate. Housekeeping deficiencies were noted in stairwells and service areas.

*Accessibility*

There are accessible Mall entrances on grade at Concourse Level on both the Liberty and Vesey Street sides of the complex. Accessible entry is also possible through the 1 and 2 WTC lobbies from grade level. The Plaza Level is accessible at grade from Tobin Plaza at several separate locations. All ADA entrances have power assist doors. Due to exterior grade changes, the Church Street entrances and the east entrance on Liberty Street enter the complex between levels. As such, ADA access is not feasible at these locations. Although the 2 Mall levels are individually accessible, interior interconnection between the Concourse

and the Plaza Levels is available only by ramp and elevator in the 5 WTC building, the office building elevators in 4 WTC, and a private tenant elevator in the Border's store. We recommend that the redevelopment of the vacant retail space in the southeast section (4 WTC area) include consideration for a public elevator in the mall common area to streamline ADA access between levels.

Public rest rooms on the Concourse Level are compliant, and several tenants have additional public "unisex" facilities that are ADA complaint. Tenant employee rest room facilities are usually of a size and layout that make ADA compliance easy to achieve.

*Violation Status*

As stated in the Offering Memorandum, "The Port Authority is a municipal corporate instrumentality and political subdivision of the States of New York and New Jersey which provides transportation, terminal, and other facilities of commerce within the Port District. As such, in connection with the Transaction, the PA will continue to maintain exclusive jurisdiction with respect to certain administrative and governmental matters involving the Complex, including compliance with building, environmental, fire and health codes." The New York City Department of Buildings has indicated that they do not maintain any records of violations for this property. A request for a Property Profile Overview for this block and lot number yields no records. The Fire Department provides normal fire fighting and a life safety service to the facility. A Memorandum of Understanding exists between the Port Authority and the Fire Department in which the Fire Department performs regular inspections and directly notifies the Port Authority Fire and Life Safety group of deficiencies to be corrected. Under a protocol with the New York City Fire Department, Port Authority Police personnel investigate certain fire alarms at the World Trade Center rather than transmitting such alarms to the New York City Fire Department.

## C. Site

See Executive Summary for site information and shared site features.

*Easements and/or Encroachments*

Conventional utility company easements are assumed. In addition there are public rights of way for the New York City Transit Authority subways and the PATH Trans-Hudson commuter rail system through the complex.

Interconnecting bridges to three adjacent properties (130 Liberty Street, 2 World Financial Center, and 7 World Trade Center) are reportedly the responsibility of the adjacent owners. There are; however, certain physical connections such as foundations, and service connections such as electrical power services that may be subject to easement or covenant agreements.

*Gas*

Gas is supplied from utility company mains in Vesey Street and Liberty Streets. There exist 2 gas meter rooms at the B-1 level for metered distribution to tenants who use gas.

*Access*

Pedestrian access is provided at grade on all four bounding streets of the complex and from the central Tobin Plaza.

*Plaza Deck*

The Plaza is a granite-surfaced reinforced concrete deck with a bituminous waterproof membrane. Areas of the perimeter of the deck, particularly under the building overhangs of 4, 5, and 6 WTC remain the original concrete with exposed aggregate surface. Expansion joints occur at the perimeter of each of the Tower buildings, and along the east side of the Plaza at the high end of the Church Street entry stairway and ramps.

*Deck Drainage*

The Plaza generally pitches towards the central area near the fountain where the runoff is collected by a circular trench drain surrounding the recessed fountain area.

*Landscaping*

Sidewalk wells, with cast iron gratings, framed in red granite pavers are provided for street trees along the Liberty, Church, and Vesey Street sidewalks. Raised planters with shrubs and annual flowers separate the central stairway from the 2 ramps at the Church Street entrance to Tobin Plaza. All other plantings are contained in monumental sized concrete planters that also serve as security barriers to prevent unauthorized vehicular access. Other street furniture includes concrete benches and concrete and stainless steel security barriers in sculptural shapes.

*Site Lighting*

City street lighting on perimeter sidewalks, newly installed site lighting from the roof line of 4 and 5 WTC, and pole-mounted, multiple-lamp fixture on the Plaza.

*Fencing*

Some rollaway security gates are provided at the base of exterior stairways to prevent unauthorized after-hours entry.

*Amenities/Special Features*

The major site amenity is the central Austin Tobin Plaza, a public space enclosed by the 6 buildings that make up the complex. The Plaza focuses on a central fountain and sculpture, representing the sun and its outward flowing rays. The Plaza is the focus of formal and informal activity during the warm weather months, when outdoor music, street vendors, and seating for the Plaza Level restaurant tenants all contribute to the life of the space. A smaller "Memorial Fountain" commemorating those who lost their lives in the terrorist bombing, is located at the west side of the Plaza between 1 WTC and the Hotel building. The Plaza is reportedly closed down in the winter months to prevent potential injury to pedestrians by the possibility of ice falling from the Towers.

*Conditions*

The majority of the Plaza, which serves as the roof for the retail mall, was resurfaced in red and gray granite in 1998-99. The fountain was rehabbed and made fully operational. New benches and planters were installed. The membrane waterproofing beneath the old pavement was probed and determined to be functioning well. Some problem leaks are still occurring, particularly near the expansion joints at the base of the Towers and along an expansion joint at Church Street. They are corrected as necessary as part of the ongoing maintenance of the center.

## D. Building Description

### 1. Structure

*Foundation*

The Mall, constructed within the overall complex has no specific foundations of its own. The concourse is built over the B-1 level of the subgrade space within the slurry wall perimeter, which has foundations resting on bedrock 70' below grade, and above the B-1 level of 4 and 5 WTC, which are supported on piles driven to rock. Portions of the Concourse are built above the old PATH station that runs along Church Street. The Plaza deck is constructed above the mall, and shares the same foundations.

*Superstructure*

The Concourse is a supported intermediate story, above Level B-1 truck dock and Plaza truck dock. The Concourse structure is structural steel wide flange columns, girders, and beams with concrete or spray-on fireproofing. Some parts of the mall are built up 7' above the former PATH structure roof, and the plenum is used for ventilation.

The exterior Plaza structure consists of structural steel wide flange columns, girders, and beams, with concrete or spray-on fireproofing.

*Floors*

The concourse floor system is reinforced concrete slab.

*Mall Ceilings*

The Concourse ceiling construction consists largely of plaster on galvanized metal lath, connected through runner channels to the Plaza slab above. The ceiling cannot sustain any live load and therefore must be supported by scaffolding if entry is required for service and repair work. Approximately 90 points of entry (ceiling hatches) are provided in various locations around the Mall to allow access to such features as the Plaza fountain pump, drains, HVAC units, etc. Procedures are already in place with the Port Authority for gaining access to these points, and the procedures should be continued in the future.

*Design Loads*

The following live loads were reported:

| Area | Live Load (psf) |
|---|---|
| Plaza | 100 |
| Concourse Common | 125 |
| Concourse Stores | 125 |
| Mall Ceilings | Assume live load is zero |
| Mechanical | NA |
| Wind | NA |
| Seismic | NA (Project predates NYC Code seismic provisions) |

*Condition*

Where they could be seen, the building's structural elements appear to be free from distress, deterioration, settlement, and overloading. Except for a limited area on the Plaza Level floor in the vacant Alexander's space floor in 4 WTC, no significant cracks were noted in visible floor slabs or stairwells. Some spray-applied fireproofing has been removed in mechanical rooms for the attachment of equipment hangers and should be replaced. There are also minor areas where fireproofing has been damaged by previous Plaza leaks. This is repaired as necessary as part of ongoing maintenance.

Structural Integrity Inspection (SII) (Data Room Checklist #I-2), performed by LERA, dated December 24, 1997, reports that tenant loading in the Concourse Level follow design criteria. Other SII reports (#I-52) performed in the last 5 years by LERA report the condition of the former PATH Terminal ceiling as good.

## 2. Exterior

*Walls*

This component of the complex has an irregular shape, which in some areas is only partially above grade. The walls of those sections under 4 and 5 WTC are clad in the same painted aluminum and glass material as the building above. In other areas the exteriors are clad with marble panels with a water resistant coating.

*Windows*

Windows in the retail areas above the Plaza Level are standard storefront type installation with black painted aluminum frames and single pane glass.

*Window Cleaning Equipment*

Window washing for these retail areas is from grade outside using extension poles, ladders, or portable rigs.

*Doors*

There are various building entrances provided from the 2 grade levels around the building perimeter. In those areas related to 4 and 5 WTC, the doors are painted aluminum frames with tempered glazing. In areas related to the two tower buildings, the doors are polished stainless steel. At each entrance there is a combination of revolving doors and either single or paired swinging doors, set up in vestibule configuration for energy efficiency. At all major common building entrances, there is at least 1 power assisted entrance door for ADA accessibility. The exception to this is the secondary Plaza entrances, and the northeast and southeast entrances to the mall where a change in level makes ADA access impractical.

*Thermal Insulation*

Spandrel panels have rigid insulation on the internal face.

*Weatherproofing Sealants*

There is elastomeric sealant at the joints in the aluminum window framing. There is rubber gasket glazing for the glass vision panels.

*Expansion/Control Joints*

Facade expansion joints were not observed, but the wall system has many components with elastomeric sealants and its expansion and contraction is self-relieving.

*Other*

Entrances are protected by the building overhang at all sides.

*Condition*

The facade appears in sound condition, but repainting should be coordinated with repainting of the 4 and 5 WTC buildings above. There is some impact damage to marble panels at the building perimeter and some panels have apparently shifted out of their original position. In addition, a water resistant coating appears to have been installed over the marble giving it an artificial appearance. This is particularly noticeable along the Vesey Street side. A series of studies of the marble panels indicates that there are no immediate dangerous conditions, but that ongoing repairs and monitoring of the panels should continue. No cracked window panels were observed. No signs of active leaks were observed.

**3. Roof**

*Roof Area*

There is no conventional roofing over this section of the complex. The Plaza deck is discussed in the site section of the Executive Summary.

**4. Interior Construction and Finishes**

*Common Areas*

The common areas of this component of the complex serve multiple functions. They act as the circulation routes of a retail shopping mall, the major pedestrian access from the terminal point of an interstate commuter rail system, lobby entrances for 4 commercial office buildings, and a tourist destination in their own right.

The Concourse Level common areas are basically a system of intersecting north/south and east/west corridors, with retail stores located on either side. This level has a mixture of old and new finishes. The older floor finishes are a mix of quarry tile, travertine and terrazzo in the earth tones that were popular in the early 1970s when the complex was built. The newer floor finishes, installed within the last year, are gray tone terrazzo, with stainless steel separator bars in geometric patterns. Older wall finishes are cream colored marble wall panels. Newer wall materials are primarily in use at tenant storefronts, and include metal and glass storefront assemblies, and butt-glazed storefront show windows on a variety of stone panel or metal bases. Common area ceilings are generally the original suspended painted gypsum plaster ceilings, with a limited area of metal panel ceiling installations. (See the Structural Section for a discussion of ceiling supports).

*Retail Tenants*

The retail spaces have been built out individually in accordance with the tenants' own designs. These designs are subject to Port Authority review to ensure that they are appropriate for the overall character of the mall. In general the tenant designs are contemporary with current retail marketing concepts, many of them being standardized designs used by upscale nationwide retailers.

Tenant finishes include stone or ceramic tile flooring, carpeting, custom cabinetry, and stylized retail lighting. Ceilings are either plaster or acoustic panels, or high tech open grid work with painted exposed structure to suit the individual designs. Tenant finish selection is of uniformly high quality. Installation workmanship and tenant maintenance are also of a high level.

*Restrooms*

Men's and women's public rest rooms are located at Concourse Level at the north end of the PATH entrance near WTC 5. The rest rooms are finished with 1' x 1' ceramic tile floors and walls, and acoustical metal panel ceiling tiles. Toilet stall partitions are floor-mounted stainless steel and vanity counters are monolithic composition material with inset lavatory bowls. Each rest room has an ADA accessible toilet stall.

*Exits*

On the Concourse Level there are 4 main exits direct to the exterior. In addition patrons can exit the complex through the lobbies of 1 and 2 World Trade Center and through the lobby of the Marriott Hotel. On the Plaza Level, direct exits to the exterior are provided through the lobbies of 4 and 5 WTC. Several retail stores also have exits directly to the exterior at grade. An egress study has indicated the need for the installation of a new stair in the vicinity of the Godiva store, leading to egress on the Plaza Level. This project in now budgeted by the Port Authority. Exit doors are generally marked with illuminated exit signs. Some additional signage may be required, especially in conjunction with the new egress patterns and stairway.

*Sound Insulation*

Some carpeting and acoustic panel ceilings provide acoustic value.

*Doors*

Incidental service doors and stairway doors are painted steel in steel frames.

*Other*

Direct access is provided down to the PATH station by a large bank of escalators from the Concourse Level. The NYC Transit subway lines 1 and 9 are accessed from either side of the main east/west corridor on Concourse Level. The N and R subway lines are accessed from 2 points along the east side of the Concourse Level. The A, C, and E subway lines are accessed from the northeast corner of the complex on Concourse Level.

*Condition*

Building common area finishes were originally of good quality and maintenance is adequate for the present tenancy. New tenant buildout over recent years has been very high quality upscale retail space, and the tenants' private expenditure has contributed to an overall impression of a vibrant and successful retail mall. Recent common area upgrades have included the installation of large areas of new terrazzo flooring in the vicinity of 1 and 2 WTC entrances and along the main north/south corridor on the Concourse Level. Two additional small areas of terrazzo installation are scheduled for late 2000 or early 2001. Consideration should be given to extending the new terrazzo finish throughout the complex on a phased basis. Several developer plans for mall upgrades have been considered over the past few years, but there has been no decision on implementation.

Structural Integrity Inspection (SII) #I-5 in the Data Room, dated September 18, 1998 found plaster ceilings in good condition, but pointed out missing spray-on fireproofing, requiring repair.

## 5. Vertical Transportation

*Overview*

The retail mall and plaza are served by 11 freight elevators. There are passenger elevators from the Plaza Level and upper levels of 4 and 5 WTC. All elevators are restricted to access by persons with security passes. There are 10 escalators connecting the Concourse to the Plaza level (2, near Duane Reade, 2 at the 5WTC building, 2 near Victoria's Secret, 2 connecting to the street level near Church and Liberty Street, and 2 connecting to street level near Borders at Church and Vesey Street). Note that tenant-owned and maintained private elevator equipment is not included in this survey. For specific details on elevator service, see Attachment 6, the BOCA Group Vertical Transportation Study.

*Condition*

The elevators and escalators appear adequately designed and are maintained under service contract with Ace Elevator Company. The PA performs maintenance Quality Assurance inspections. The PA Vertical Transportation Department notes that there is additional wear and tear on the escalators due to high traffic volume and the use of hand carts and other wheeled vehicles. An elevator modernization program is in progress. Note that the access to the B-1 tenant space is via the freight elevator.

## 6. HVAC

*Overall Systems*

Heating and cooling for the office and public circulation areas are provided by central station air handling units (AHUs). A few retail stores are also supplied by the AHUs, but the majority of retail stores have their own fan coil units. In addition there are reheat water, auxiliary chilled water and primary chilled water lines to supply tenant proprietary HVAC systems.

*Heat*

Medium pressure steam, supplied from the central plant, goes through pressure reducing stations, located on the B-1 Level mechanical equipment rooms (MERs) in the 4 and 5 WTC. The low-pressure steam is piped to coils in the Central Station AHUs, also located in the 4 and 5 WTC MERs. Air tempered to 60° by the coils is then supplied to the retail stores with the ventilation air.

*Air Conditioning*

Chilled water from the central plant is supplied to plate and frame heat exchangers that cool a secondary water supply that is then pumped to tenant fan coil units. Some tenants receive primary chilled water directly to their fan coil units.

*Air Handling Units*

Four central AHUs, located in the 4 WTC B-1 Level MER, rated from 20,650 to 49,000 cfm with 30 hp and 40 hp motors; and 3 central AHUs, located in the 5 WTC B-1 Level MER, rated from 31,000 to 38,000 cfm with 30 hp and 40 hp motors supply conditioned air to some retail tenants, public circulation areas, and interior spaces and the PIUs in the office areas.

Two AHUs, with steam coils, located in the 4 WTC B-1 Level MER, rated at 50,000 and 62,000 cfm with 60 hp, and 6 AHUs, with steam coils, located in the 5 WTC B-1 Level MER, rated from 20,000 to 77,000 cfm with 15 hp to 75 hp motors supply tempered outside air to the retail tenants.

*Fans*

Toilet exhaust and AHU return air fans are installed.

| | |
|---|---|
| *Condition* | The mechanical systems are adequately designed, using brand-name equipment, which provides adequate cooling for the office areas. The freeze protection systems for the AHUs have been abandoned in place. Consideration should be given to removal of the equipment for these systems. The equipment has been well maintained, some equipment is original (30 years old), and has exceeded its published service life. Replacement should be phased over the next 10 years. A recent capital program to update the HVAC air-handling equipment has effectively increased the anticipated service life of the equipment. Equipment or component replacement is performed as part of the ABM service contract. |

**7. Plumbing**

| | |
|---|---|
| *Storm and Sanitary Sewers* | Plaza storm water is collected by drains and conveyed by internal leaders to the building storm sewers. Duplex sump pumps are located in the B-1 Level MER.<br><br>Sanitary waste flows by gravity to the building's sewer. Duplex ejectors are located in the B-1 Level MER. |
| *Water Service* | A common metered domestic water line serves the Mall and WTC 4 and 5. |
| *Water Pipe Material* | Copper observed |
| *Domestic Water Heaters* | Domestic hot water is provided by steam/water pre-heat tanks, and steam/hot water heaters and/or electric water heaters for the office and public circulation area toilet rooms. Retail tenants have their own water heaters. |
| *Pumps* | The following pumps are located in 5 WTC in the B-1 Level MER and serve the Plaza Fountain:<br><br>Two 5-hp, 200 gpm make-up water pumps<br><br>Four 125-hp, 3,400 gpm fountain pumps<br><br>Fountain piping and valves are located in the ceiling above the Mall concourse between the Gap and Banana Republic stores. |
| *Toilet Rooms* | There are 2 sets of men's and women's toilet rooms on a typical office floor. One set of public men's and women's toilet rooms are located in the public space. |
| *Tanks* | 10,000-gal. water storage tank for the Plaza Fountain |

| | |
|---|---|
| *Condition* | The plumbing system appears to be in generally good condition. The plumbing systems are reportedly functioning satisfactorily. Although in operation, replacement of the pumps and water heaters should be anticipated over the next 10 years. Equipment or component replacement is performed as part of the ABM service contract. |

**8. Electrical**

| | |
|---|---|
| *Main Service* | The Mall electrical service is common with 4 and 5 WTC. Electrical substations in 1, 2, 4 and 5 WTC supply 277/480-volt and 120/208-volt electrical panels in the retail and office spaces. Dry transformers within the tenant spaces reduce the 277/480-volt service to 120/208 volts. |
| *Capacity* | Adequate electrical capacity is provided. |
| *Wiring* | Copper observed. |
| *Emergency Power* | Six generators, located in the central plant, supply emergency power for lighting, elevators, and the life safety systems throughout the Mall. The emergency services for 4 and 5 WTC substations are completely backed up by the central tertiary substation operating from PSE&G via the PATH tunnel system. |
| *Lighting* | Recessed, surface- and wall-mounted and suspended fluorescent fixtures, wall-mounted incandescent fixtures, and decorative fixtures provide interior building lighting. |
| *Other* | Telephone/communication services are provided for retail and office tenants. |
| *Condition* | The electrical systems are reportedly functioning satisfactorily. |

**9. Life Safety**

| | |
|---|---|
| *Sprinklers* | The building is completely sprinklered, except for electric and telephone closets, and the B-1 Level MERs. An 8" sprinkler loop runs throughout the mall equipped with valves to enable the isolation of certain sections. |
| *Fire Standpipe* | A second 8" loop, with valves for isolation, supplies the standpipe system. Fire hose cabinets are provided in various locations in the Mall. |

*Fire Alarm System* — Siemans Cerebrus Pyrotronics MXL fire alarm system is installed with control and annunciator panels, manual pull stations, alarms, audio/visual alarms, strobe lights, flow and tamper switches, fire warden telephones, and smoke detectors. Only punch list items remain to be completed. The main panel is located in the Fire Command Station of 2 WTC and back-up panels are located in 1WTC and in the Operations Command Center.

*Fire Extinguishers* — Fire extinguisher cabinets are located throughout the areas.

*Emergency Lighting* — Selected fixtures are connected to emergency circuits, and some battery-operated fixtures are installed.

*Exit Lighting* — Illuminated exit signs, connected to emergency circuits, are provided.

*GFIs* — Installed in some toilet rooms.

*Condition* — The life safety systems are typical for office/retail areas. A new fire alarm system is currently being installed.

## 10. Energy Conservation

*General* — The building was constructed with certain energy conserving features such as insulated walls and roofing, and tinted glazing. Most of the lighting fixtures use energy saving fluorescent lamps and electronic ballasts.

*Energy Management* — The building does not have an energy management system.

## 11. ADA Compliance

*Overview* — For the purpose of this report, a general review of the property has been conducted to determine basic compliance with Title III of the federally-enacted ADA, dated July 26, 1990. Under the ADA, buildings initially occupied after January 26, 1993 (or building areas altered after January 26, 1992), are required to comply with ADA Accessibility Guidelines (ADAAG). Projects, with areas of public accommodation, constructed prior to this date are required to comply forthwith, to the extent it is "readily achievable." Provisions in the Act require Owners of existing properties with public accommodations to identify barriers for physically disabled persons that exist on the site or in buildings. The barriers should be systematically removed according to a given set of priorities, the degree allowed by structural feasibility, and the financial resources available. The obligation to remove barriers is a continuing one.

The ADA sets forth "recommended priorities for public accommodations" to be accessible to the disabled. In general, the three priorities are as follows:

1. Access from public sidewalks, parking, or public transportation to a building entrance;
2. Access to any areas of goods and services that are made available to the public; and,
3. Access to rest room facilities.

During our tour of the project, we noted the following:

There are accessible Mall entrances on grade at Concourse Level on both the Liberty and Vesey Street sides of the complex. Accessible entry is also possible through the 1 and 2 WTC lobbies from grade level. The Plaza Level is accessible at grade from Tobin Plaza at several separate locations. Concourse Level entrances from the street have power assist doors. Plaza Level doors are manual type, but are of sufficient width to meet ADA requirements. Although the 2 Mall levels are individually accessible, interior interconnection between the Concourse and the Plaza Levels is available only by ramp and elevator in the 5 WTC building, the office building elevators in 4 WTC, and a private tenant elevator in the Border's Store. We recommend that the redevelopment of the vacant retail space in the southeast section (4 WTC area) include consideration for a public elevator in the mall common area to streamline ADA access between levels.

Mall toilet rooms have ADA features.

## 12. Code Compliance

| | |
|---|---|
| *Applicable Code* | 1968 NYC Building Code as Administered by the Port Authority of New York and New Jersey |
| *Building Construction Classification* | Type 1B -noncombustible, fire-protected, sprinklered |
| *Occupancy Type* | Group C - Retail; Group E - Office |

*Violations Record*

As stated in the Offering Memorandum, "The Port Authority is a municipal corporate instrumentality and political subdivision of the States of New York and New Jersey which provides transportation, terminal, and other facilities of commerce within the Port District. As such, in connection with the Transaction, the PA will continue to maintain exclusive jurisdiction with respect to certain administrative and governmental matters involving the Complex, including compliance with building, environmental, fire and health codes." The New York City Department of Buildings has indicated that they do not maintain any records of violations for this property. A request for a Property Profile Overview for this block and lot number yields no records. The Fire Department provides normal fire fighting and a life safety service to the facility. A Memorandum of Understanding exists between the Port Authority and the Fire Department in which the Fire Department performs regular inspections and directly notifies the Port Authority Fire and Life Safety group of deficiencies to be corrected. Under a protocol with the New York City Fire Department, Port Authority Police personnel investigate certain fire alarms at the World Trade Center rather than transmitting such alarms to the New York City Fire Department.

*Certificate of Occupancy*

A Certificate of Occupancy has not been issued by the City of New York because property owned by the Port Authority is not subject to the Building Code of the City of New York. We have observed "Permits to Use or Occupy" issued by the Port Authority for specific work, notably the October 10, 1997, Permit issued following completion of repairs following the 1993 bombing, but the Port Authority did not routinely issue the equivalent of a Base Building Occupancy Certificate until January 1992. In addition, in December 1995, the Port Authority started an optional "Professional Self-Certification" program for alteration work by tenants. The PA has issued "Consent to Occupy" certificates for specific work under this program.

## E. Recommendations

We have prepared a listing of items that will require action within the next 10-year period. Immediate expenditures indicate deficiencies which are in violation of codes, which pose a danger to public safety, or which, if left uncorrected, will lead to further deterioration of the property or significantly impact marketability or habitability. Recommended work, not required by agencies or codes, which, in our opinion, represents expenditures that should be made in the context of the prudent management of the property is also listed. These items should be undertaken on a priority basis. Items have been divided into 1- to 5-year and 6- to 10-year time frames.

| | IMMEDIATE (0 - 1 YR.) | FUTURE (1 - 5 YRS.) | FUTURE (6- 10 YRS.) |
|---|---|---|---|
| **Site** | | | |
| 1. Some problem leaks are still occurring in the Plaza deck, particularly near the expansion joints at the base of the Towers and along an expansion joint at Church Street sidewalk. They are corrected as necessary as part of the ongoing maintenance of the center. | X | X | X |
| 2. In general the concrete sidewalks around the site perimeter are sound without tripping hazards, but there has been spalling and cracking over the years that is beginning to lead to an unattractive appearance. Pavement replacement is in progress along the West Street side of the site adjacent to the Customs House. A 1999 study of the sidewalk conditions by the Port Authority includes several recommendations for upgrades; however, there has been no decision to proceed at this time. | - | X | - |
| 3. Tobin Plaza areas outside of the new granite surface have varying degrees of deterioration. Repairs to Plaza paving, including caulking and grouting repairs are done as part of ongoing maintenance. Replacement of a section of concrete pavement beneath the WTC 4 overhang was in progress during our site visit. | X | X | X |

| | IMMEDIATE (0 - 1 YR.) | FUTURE (1 - 5 YRS.) | FUTURE (6 - 10 YRS.) |
|---|---|---|---|
| **Structure** | | | |
| 4. Investigation of the minor cracks in the Plaza Level floor slabs in the vacant Alexander's space is recommended, as part of the ongoing Port Authority contract with LERA. | X | | |
| 5. Structural Integrity Inspection (SII) I - 5 in the Data Room, dated September 18, 1998, found plaster ceilings in good condition, but pointed out of missing spray-on fireproofing, requiring repair. Repair of spray-applied fireproofing damaged by Plaza leaks is handled as part of the ongoing building maintenance program. | X | | |
| **Exterior** | | | |
| 6. Painting of Retail mall exteriors should be coordinated with the eventual painting of WTC 4 and 5. | | X | X |
| 7. Repair damaged and/or shifted exterior marble panels. Continue to monitor marble panels for additional movement as recommended by LERA report. | | X | |

| | IMMEDIATE (0 - 1 YR.) | FUTURE (1 - 5 YRS.) | FUTURE (6- 10 YRS.) |
|---|---|---|---|
| **Interiors** | | | |
| 8. Replacement of 2 small areas of terrazzo flooring in the Concourse common areas is underway. | X | | |
| 9. Common area improvements including public space code work, infrastructure improvements, Mall circulation improvements and customer service improvements are included in 2001-2005 capital budget projections. | X | X | |
| 10. The rest room finishes are good quality durable materials, but the hard use these facilities get in an installation of this nature dictates that periodic replacement and modernization is necessary. Rest room rehab is included in 2001 capital budget projections. | X | | |
| 11. Continue to monitor interior marble wall panels for possible movement as part of normal maintenance procedures as recommended by LERA. | | X | |
| **Vertical Transportation** | | | |
| 12. Elevator modernization projects are ongoing. Information is provided in the 4 and 5 WTC reports. | | | X |

| | IMMEDIATE (0 - 1 YR.) | FUTURE (1 - 5 YRS.) | FUTURE (6- 10 YRS.) |
|---|---|---|---|
| **HVAC** | | | |
| 13. Considering the age (30 years) of most of the mechanical equipment, ongoing phased replacement of components should be expected to continue over the next 10 years. These items are located in 4 and 5 WTC and discussed in those report sections. This required maintenance is currently handled under the terms of the service contract with ABM. | | | |
| 14. Upgrades to the HVAC controls and smoke management systems are included in 2001 budget projections. | | X | |
| **Plumbing** | | | |
| 15. Replacement or refurbishment of the various pumps and water heaters should be anticipated over the next 10 years as the equipment reaches the limits of service life. Equipment serving this area is located in 4 and 5 WTC and is discussed in those report sections. | | | |

## ADA

During our tour of the project, we noted the following areas that do not appear to meet the requirements of ADAAG and suggest that these features be added when feasible or when areas are renovated. It is our understanding that all full-floor tenants are responsible for provision of ADA features within their spaces under lease terms.

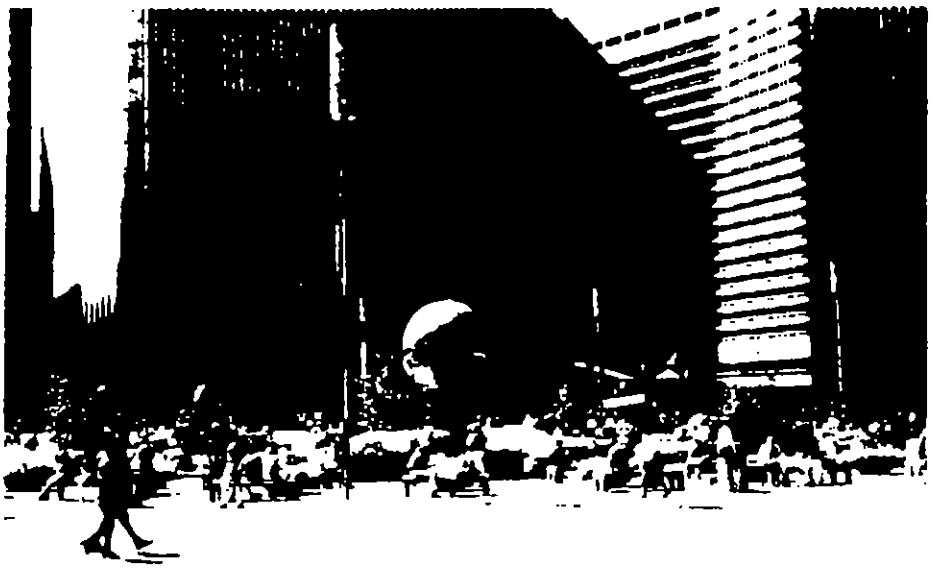
1. Accessible travel between the Concourse and Plaza Levels of the retail area is available only by ramp and elevator in the 5 WTC building, the office building elevators in 4 WTC, and a private tenant elevator in the Border's store. We recommend that the redevelopment of the vacant retail space in the southeast section (4 WTC area) include consideration for a public elevator in the mall common area to streamline ADA access between levels. ADA Projects are included in the capital budget projections for years 2001–2005.

## F. Attachments

1. Photographs
2. Site Orientation Map (Reproduced with permission from J.P. Morgan Property Book)
3. Concourse Floor Plan (Reproduced with permission from J.P. Morgan Property Book)
4. Plaza Floor Plan (Reproduced with permission from J.P. Morgan Property Book)
5. BOCA Group International Vertical Transportation Study
6. Crandlemere and Associates Asbestos-Containing Materials Document Review and Evaluation

# ATTACHMENT 1

Photographs



Photograph 1

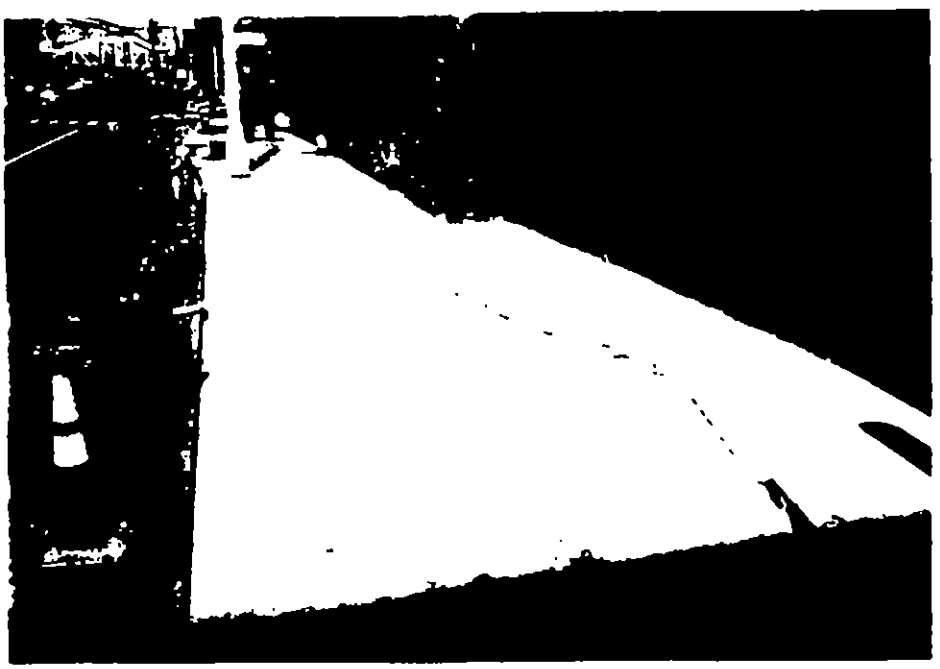
Austin Tobin Plaza looking southwest

Photograph 2

Sidewalk, curb, and planter details on sidewalk looking west along Vesey Street

**Photograph 3**

**Sidewalk conditions along Vesey Street near West Broadway**



**Photograph 4**

**Sidewalk replacement in progress West Street near Customs House**

Photograph 5

Vehicular drop off at entrance to 1 WTC on West Street

Photograph 6

Typical granite stairway from Plaza between WTC 1 and hotel

**Photograph 7**

**Street furniture and pavement south of WTC 2 *along Liberty* Street**

**Photograph 8**

**New granite pavement south at 2 WTC entrance**

**Photograph 9**

**Sidewalk and steps south of 4 WTC at Liberty and Church Street**

**Photograph 10**

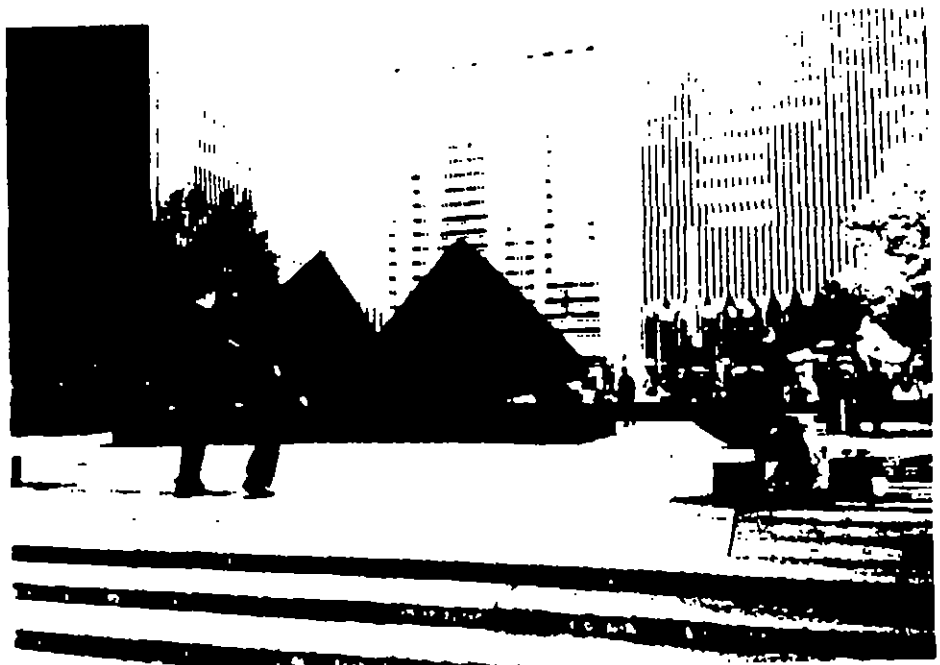
**Street furniture, planters, and tree wells along Church Street at 4 WTC**

**Photograph 11**

**Ramped entrance from Church Street looking west into Tobin Plaza**

**Photograph 12**

**Church Street steps entering Plaza**



**Photograph 13**

**Sculpture at entrance to Plaza on Church Street**

**Photograph 14**

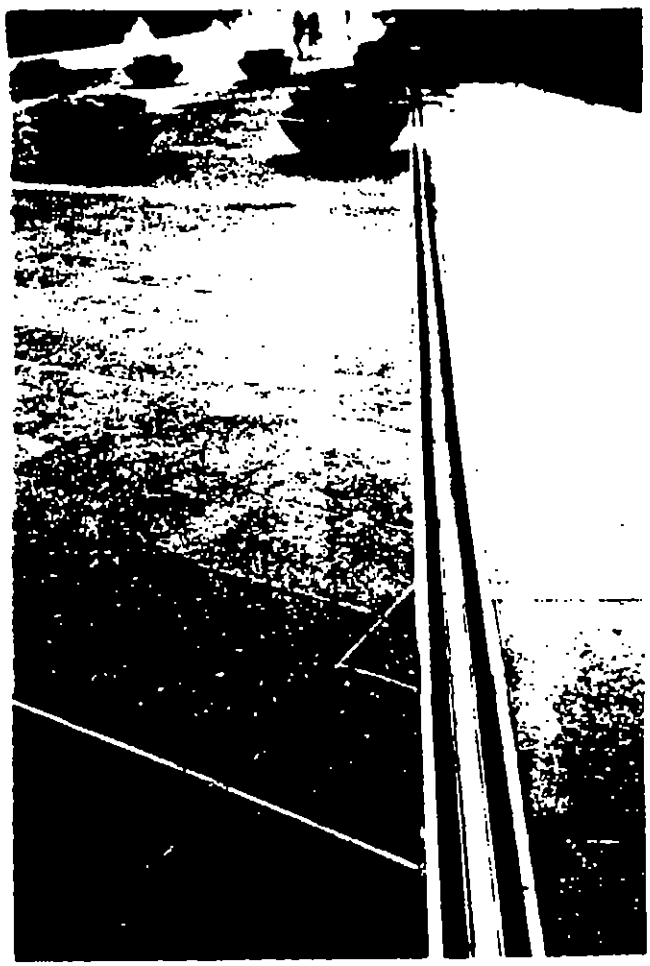
**Overview of Plaza from 4WTC**

Photograph 15

Damaged Plaza pavement under overhang for 4 WTC

Photograph 16

Planter damage at Plaza level near 4 WTC



Photograph 17

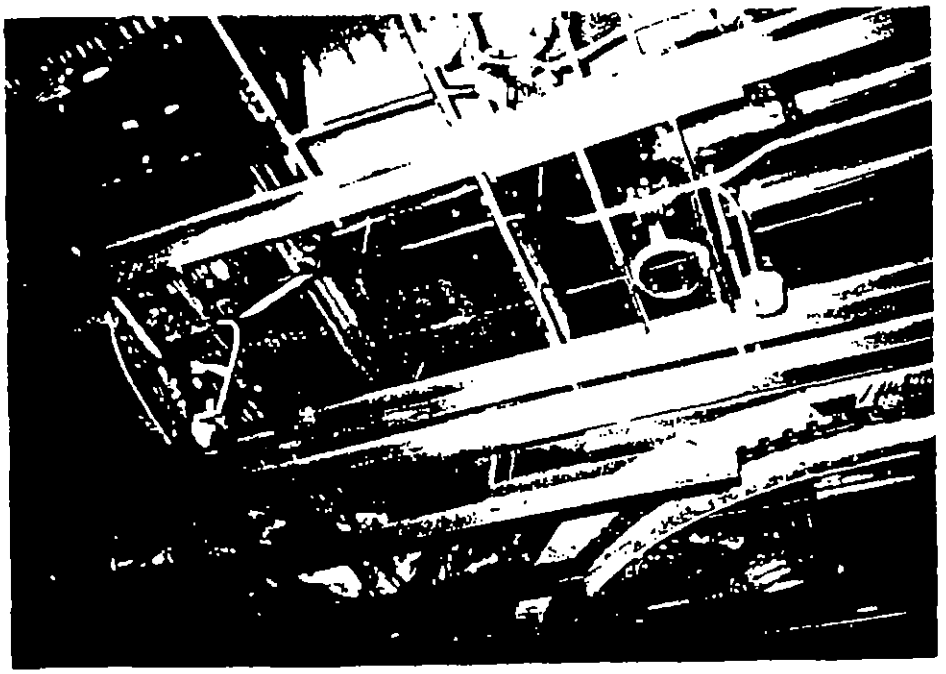
Expansion joint in Plaza deck along east side near Church Street

Photograph 18

Leaks at underside of Plaza deck visible near 1 WTC entrance

**Photograph 19**

**Structure of Concourse level visible from 4 WTC mechanical room on B1 level**

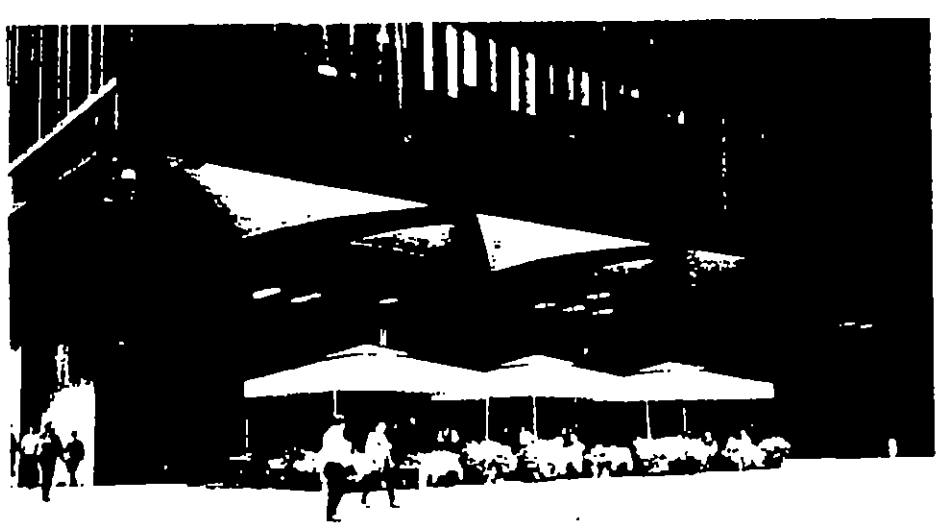


**Photograph 20**

**Metal deck and framing for Plaza level visible from construction area in Concourse level**

Photograph 21

Steel framing and metal deck for 3rd Floor framing visible in vacant retail space at 4WTC Plaza level



Photograph 22

Exterior finishes and space under overhang being used for restaurant seating

**Photograph 23**

**Detail of exterior structure and finishes at 5 WTC**

**Photograph 24**

**Doors to northeast building entrance occur on a level between the Concourse and the Plaza**

**Photograph 25**

**Mall entrance detail along Vesey Street – Note exterior escalators to Plaza level on the right**

**Photograph 26**

**Retail showcase windows at Liberty Street side**

**Photograph 27**

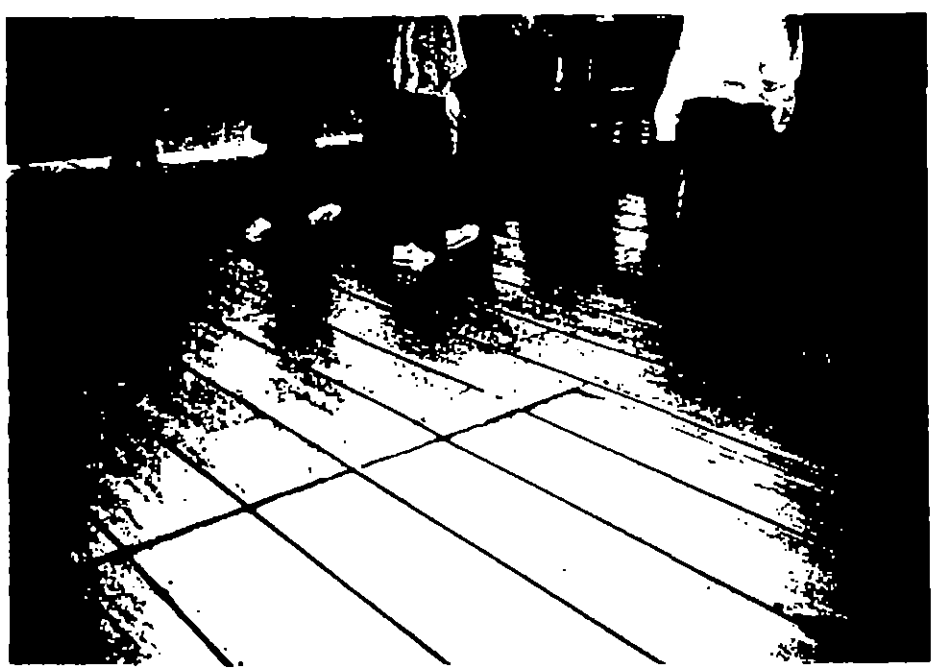
**Example of displaced marble panels to be monitored for further movement**

**Photograph 28**

**Damaged marble panel near bottom of exterior stairway between 1 and 4 WTC**

**Photograph 29**

**Central area of Concourse level at head of PATH escalators**



**Photograph 30**

**Old travertine flooring in an area scheduled to be replaced with terrazzo**

**Photograph 31**

**New terrazzo flooring in the north Concourse corridor looking west towards 1 WTC**

**Photograph 32**

**New terrazzo flooring in west corridor looking south towards 2 WTC**

**Photograph 33**

**South corridor with original finishes looking east from 1 WTC**

**Photograph 34**

**Intersection of south and east corridors with original finishes**

**Photograph 35**

**Central corridor looking north towards PATH entrance area**

**Photograph 36**

**Central corridor looking south toward Liberty Street entrance**

**Photograph 37**

**Detail of Liberty Street entrance doors with ADA features on left**

**Photograph 38**

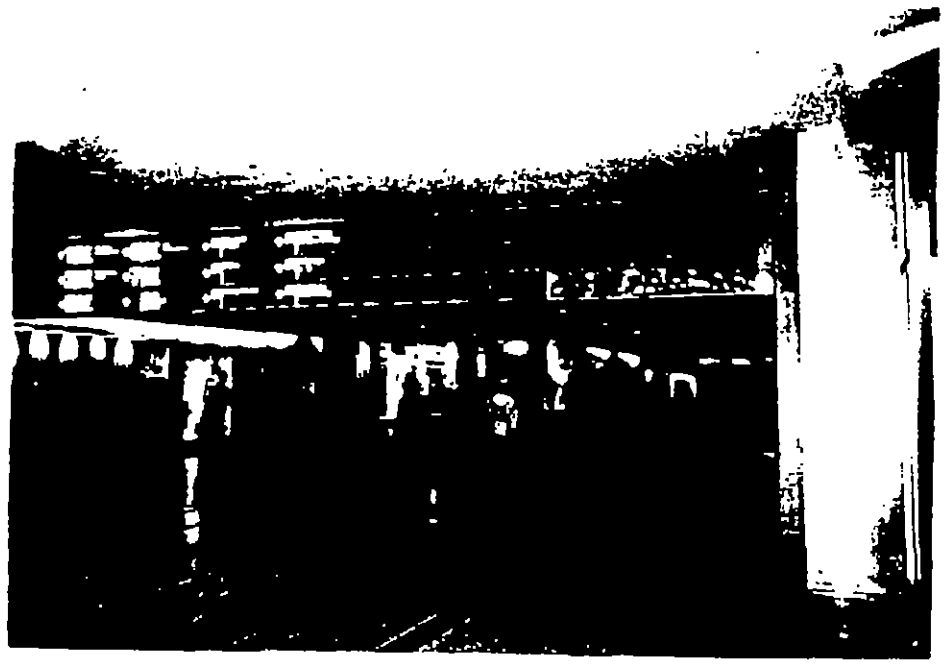
**Stairway and escalators at southeast building entrance**

Photograph 39

Lobby to 4 WTC at Concourse level is from the retail mall area

Photograph 40

East corridor looking north

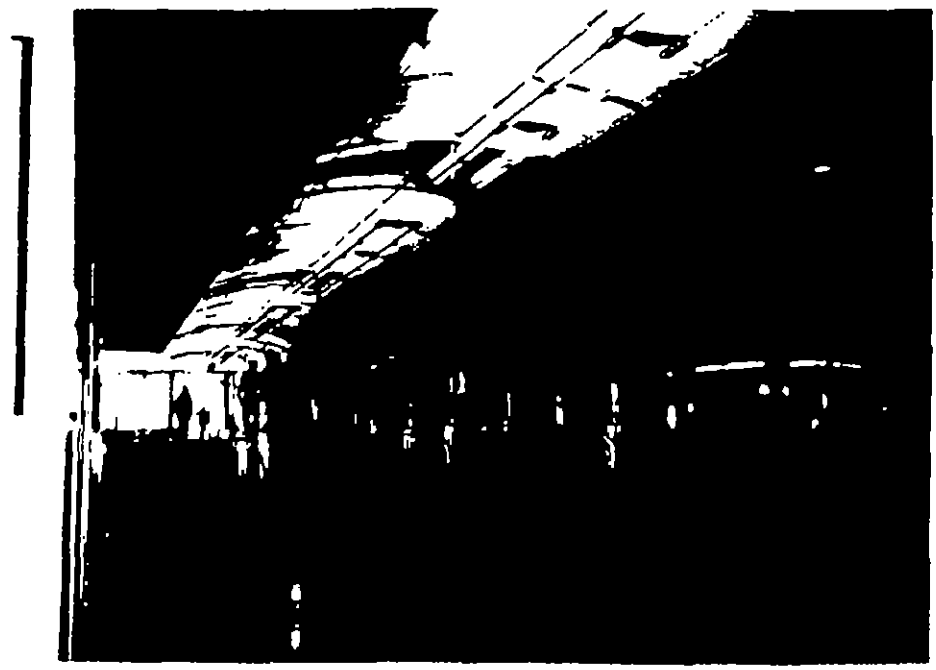


**Photograph 41**

**Central corridor looking west**

**Photograph 42**

**North corridor looking east**



Photograph 43

5 WTC lobby is accessed by stairway and ADA ramp from mall at Concourse level

Photograph 44

Grade level entrance at northwest corner of complex occurs between Plaza and Concourse levels below the 5 WTC building

**Photograph 45**

Entrance from Plaza side at 5 WTC

**Photograph 46**

Entrance to NYC subway system from eastern corridor

**Photograph 47**

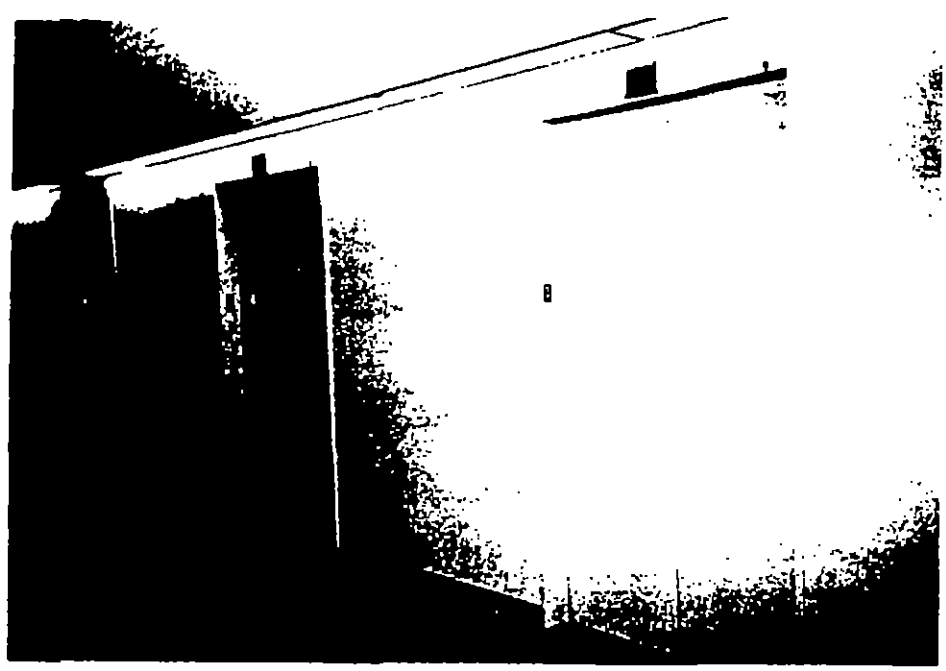
**Vacant retail space at Plaza level below 4 WTC**

**Photograph 48**

**Change in level in retail space Plaza level below 4 WTC**

**Photograph 49**

**Rear service corridor at Concourse level east side**

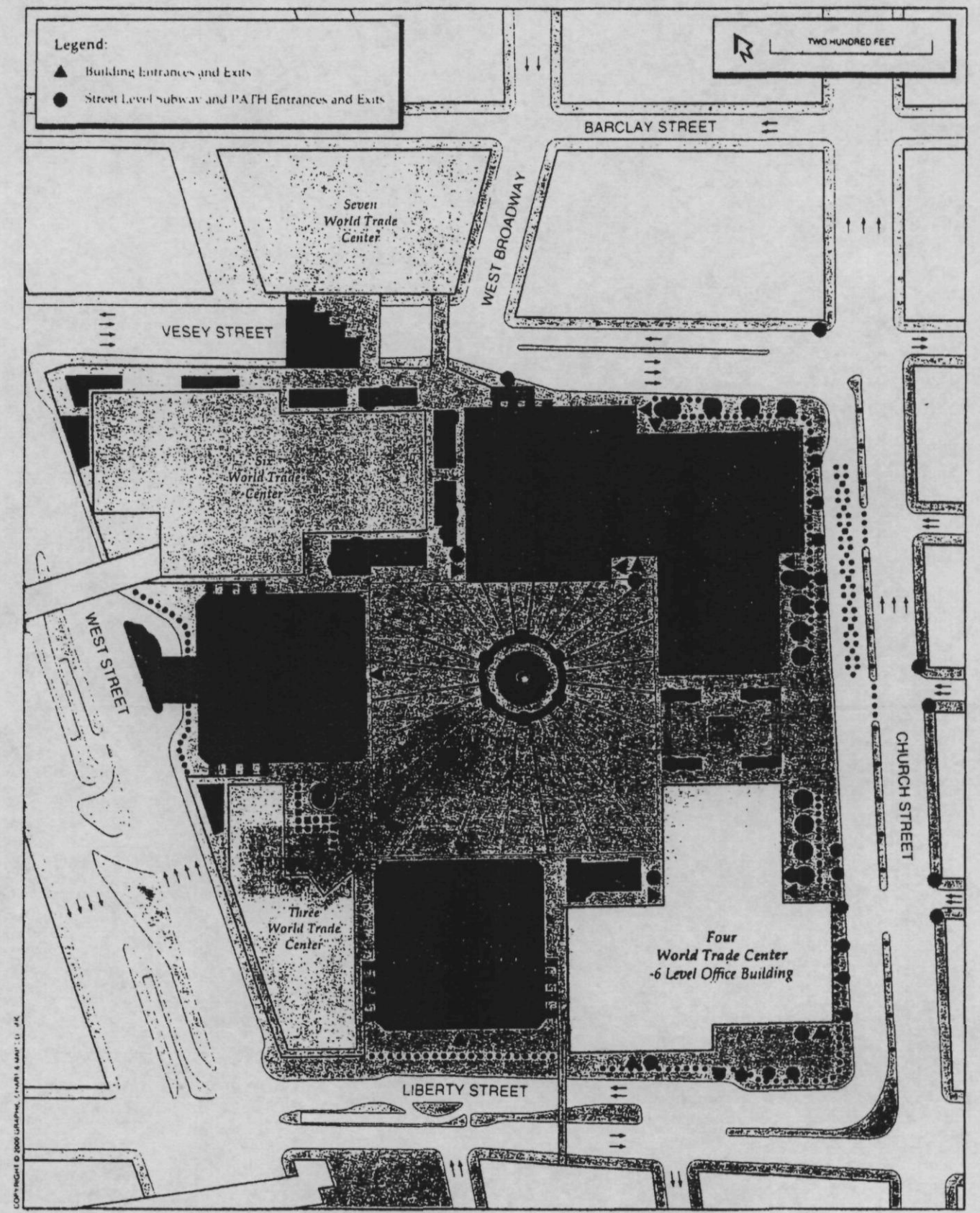


**Photograph 50**

**Elevator lobby at 4 WTC 3rd Floor**

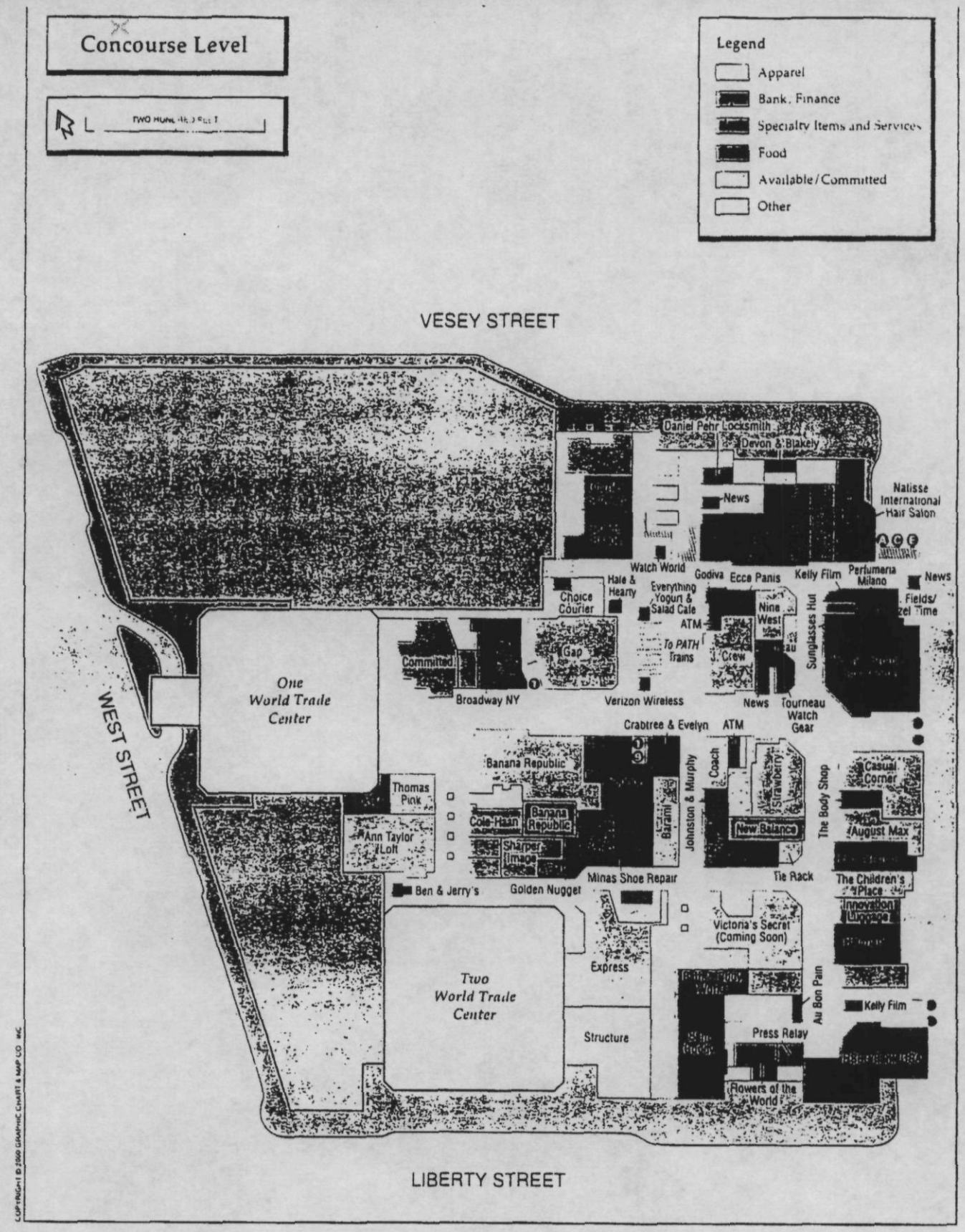
# ATTACHMENT 2

Site Orientation Map
(Reproduced with permission from J.P. Morgan Property Book)


Legend:
Building Entrances and Exits
Street Level Subway and PATH Entrances and Exits
TWO HUNDRED FEET
BARCLAY STREET
Seven World Trade Center
WEST BROADWAY
VESEY STREET
Six World Trade Center
WEST STREET
CHURCH STREET
Three World Trade Center
Four World Trade Center -6 Level Office Building
LIBERTY STREET

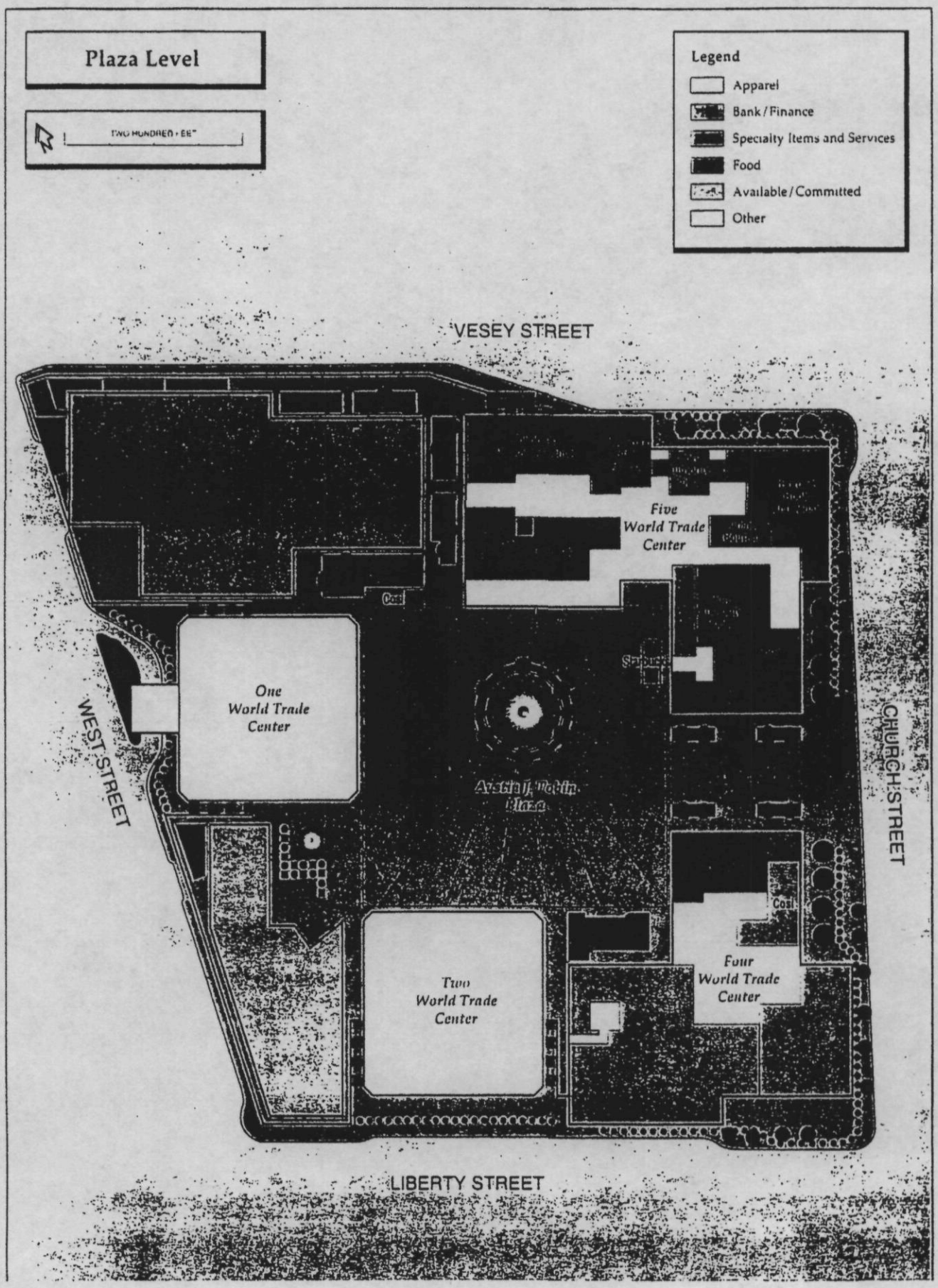
# ATTACHMENT 3

Concourse floor plan
(Reproduced with permission from J.P. Morgan Property Book)


Concourse Level
Legend
Apparel
Bank, Finance
Specialty Items and Services
Food
Available/Committed
Other
VESEY STREET
WEST STREET
LIBERTY STREET
One World Trade Center
Two World Trade Center
Structure
Daniel Pehr Locksmith
Devon & Blakely
News
Natisse International Hair Salon
Watch World
Hale & Hearty
Godiva
Ecce Panis
Kelly Film
Perfumeria Milano
Choice Courier
Everything Yogurt & Salad Cafe
ATM
Nine West
Sunglasses Hut
Fields/ Zel Time
Committed
Gap
To PATH Trains
J. Crew
Broadway NY
Verizon Wireless
News
Tourneau Watch Gear
Crabtree & Evelyn
ATM
Banana Republic
Thomas Pink
Ann Taylor Loft
Cole-Haan
Banana Republic
Sharper Image
Barami
Johnston & Murphy
Coach
Strawberry
New Balance
The Body Shop
Casual Corner
August Max
Minas Shoe Repair
Tie Rack
The Children's Place
Ben & Jerry's
Golden Nugget
Victoria's Secret (Coming Soon)
Express
Au Bon Pain
Kelly Film
Press Relay
Flowers of the World
COPYRIGHT © 2000 GRAPHIC CHART & MAP CO. INC.

# ATTACHMENT 4

Plaza floor plan
(Reproduced with permission from J.P. Morgan Property Book)


Plaza Level
TWO HUNDRED FEET
Legend
Apparel
Bank / Finance
Specialty Items and Services
Food
Available / Committed
Other
VESEY STREET
Five World Trade Center
Cost
One World Trade Center
WEST STREET
CHURCH STREET
Cost
Two World Trade Center
Four World Trade Center
LIBERTY STREET

# ATTACHMENT 5

BOCA Group International Elevator Survey Report

# ATTACHMENT 6

Crandlemere and Associates Asbestos-Containing Materials
Document Review & Evaluation

R. W. CRANDLEMERE & ASSOCIATES, INC.
PROTECTING BUSINESS AND THE ENVIRONMENT

# ASBESTOS-CONTAINING MATERIALS

# DOCUMENT REVIEW AND EVALUATION

# RETAIL MALL AND PLAZA

# WORLD TRADE CENTER

# NEW YORK CITY, NY 10081

Project #000095

Merritt & Harris, Inc. #20-251E

User:

Merritt & Harris, Inc.
Attn: Mr. Robert G. Weiland, V. P.
110 East 42nd Street, 12th Floor
New York City, NY 10017-5685

Date Issued: November 7, 2000

549 Columbian Street, Suite 305, Weymouth, MA 02190 Tel. (781) 340-6161 Fax (781) 340-9191

The Asbestos-Containing Materials Document Review and Evaluation described herein was conducted by the undersigned, of R W Crandlemere & Associates, Inc. (CRANDLEMERE & ASSOCIATES). CRANDLEMERE & ASSOCIATES assessment consisted solely of the activities described in the Introduction of this report. The assessment was conducted in accordance with the Scope of Work in our Proposal No 00-090. It is subject to the Limitations and Service Constraints as provided in Appendix A of our ASTM Phase I Environmental Site Assessment report prepared as part of this Project. See Appendix F of that report for ASTM definitions of terms in italics in this report.

Report Prepared by:

R. Wayne Crandlemere
President

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1.2 Scope of Work

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APPENDICES

Appendix A Back Up Documentation

# 1.0 INTRODUCTION

R. W. Crandlemere & Associates, Inc. (CRANDLEMERE & ASSOCIATES) was retained by Merritt & Harris, Inc. (the *user*) to conduct an ASTM E1527-97 Phase I *Environmental Site Assessment* (ESA) of One, Two, Four and Five World Trade Center, located in the Borough of Manhattan, New York City, New York, 10081.

It is our understanding that Merritt & Harris, Inc. is providing this information in conjunction with, and as part of, a larger assessment of the *property* and has named The Port Authority of New York and New Jersey as an *additional user* as defined by the ASTM Standard E1527-97 Section 3.3.39. As an *additional user*, The Port Authority of New York and New Jersey may rely on the information presented in this report.

This report presents CRANDLEMERE & ASSOCIATES' professional opinion, and no warranty, expressed or implied, is made. The Port Authority of New York and New Jersey has the right to reproduce in full and provide copies of this report to interested parties. All reports, both verbal and written, are for the benefit of The Port Authority of New York and New Jersey and its' agents, employees, participates, and assigns.

On September 26, 27, 28 and 29 and October 10 and 11, 2000 Mr. R. Wayne Crandlemere of CRANDLEMERE & ASSOCIATES conducted a *Site visit* to identify *recognized environmental conditions* at the Site. In addition, CRANDLEMERE & ASSOCIATES' assessment included reconnaissance of adjacent properties, background research, and review of available local, state and federal regulatory records regarding the presence of petroleum products or hazardous materials at or in the vicinity of the Site.

The results of our work regarding the ASTM Standard for a Phase I Environmental Site Assessment of the Site is provided in a separate Phase I ESA report.

This report addresses the asbestos-containing materials (ACM) related to the Retail Mall and Plaza of the World Trade Center (including elevator, façade, and asbestos issues for this building). This report will contain the Site issues and the Concourse, Plaza and 3rd floors of Four and Five World Trade Center, which are defined as retail space by the Offering Memorandum.

See the separate reports specifically related to the One World Trade Center, Two World Trade Center, Four World Trade Center, Five World Trade Center, Central Services and Subgrade for ACM information specific to those buildings and facility areas.

## 1.1 Background

The World Trade Center was constructed between 1966 and 1970 when asbestos was used in buildings as a fire retardant. According to the World Trade Center Property Book (see Section 3.4), "sprayed on asbestos is present within the 6th floor catwalks, mezzanine substructure, elevator shafts and machine rooms, interior core pipe chases, and electric and phone closets of the Twin Tower buildings. Additionally, asbestos-containing thermal system pipe insulation is present in pipe chases, the Concourse ceiling plenum

and in MERs [mechanical equipment rooms], while vinyl asbestos floor tiles are present throughout the complex. The Port Authority has removed a large portion of the asbestos material typically located on the structural columns and on pipe insulation from tenant floors in One World Trade Center, and has removed much of the pipe wrap insulation found in the Subgrade. The practice of containment has not been implemented at the World Trade Center."

"In addition to full-scale abatement projects, the World Trade Center has instituted an ongoing operations and maintenance program whereby specific individuals on the staff are trained as certified ACM handlers and can respond with appropriate equipment and procedures to manage incidental ACM incidents. Tenants whose space may contain ACM have been formally notified."

1.2 Scope of Work

Beyond the Scope of Work for the ASTM Standard for a Phase I Environmental Site Assessment, but as required by the *user*, summaries of readily available information (provided by and apparently prepared by the Port Authority of New York and New Jersey) pertaining to the presence of asbestos-containing building materials (ACBM) and documentation of the work done to abate ACBM was evaluated. No sampling or analysis was included and this is not to be interpreted as a complete asbestos survey.

Please note: There is reported litigation in progress for cost-recovery of money related to ACM abatement and/or management. This litigation was not evaluated as part of this assessment and the *user* should consider a detailed review of the on-going litigation and make their own determination as to the impact, if any, on their use of this report and/or future impact of the litigation on their decision making process related to the World Trade Center. Further, the information presented in this report is based at least in part on a somewhat arbitrary separation of areas of the complex that may or may not have any basis in the current operation of the Complex as it is currently managed as one facility. The *user* should consider this report as a good faith effort to present ACM related information to the subject area, however, the *user* is encouraged to review the ACM related Section of the Phase I Environmental Site Assessment (ESA) report which provides a summary of all ACM related information provided by the *owner*. Included in Appendix H-7 of the ESA report are copies of the asbestos program highlights as presented in the World Trade Center Environmental Programs 1999 Year End report. This includes a summary of 1999 Asbestos Projects, World Trade Center Asbestos Disclosure, World Trade Center Elevator Shaft Asbestos Assessment, and World Trade Center Asbestos Contract Administration procedures. Portions of those documents are included in this report. Additionally, the *user* should consider an independent review of the information provided.

It should also be noted that certain materials such as fire doors were not included in the materials suspected to be asbestos-containing and have not been tested or otherwise investigated. It was reported that testing of spline ceilings, hung ceilings, wallboard and wallboard joint compound determined that they were not ACM throughout the facility. A

review of test results was not performed and we cannot verify the adequacy of such testing. The *user* may wish to further investigate such materials.

There have been significant on-going asbestos abatement projects and cost estimates provided by the *owner* indicate the following estimated removal costs:

| Material | Removal Cost |
|---|---|
| Vinyl asbestos tile (VAT) | $ 5-6/square foot |
| Sprayed-on Fireproofing | $20-25/square foot |
| Thermal System Insulation (TSI) | $15/linear foot |

The actual costs for VAT removal for 1999 projects are provided in Appendix H-7 of the Phase I ESA report.

Documentation regarding the presence of ACM in elevator shafts is presented by shaft designation. It is unclear where the shafts are located within the facility and the *user* should consider cross-referencing the shaft locations to the area under consideration. Mr.. Taylor reported that there are forty (40) shafts that contain ACM within the Center.

## 2.0 SUMMARY OF REVIEW OF DOCUMENTS

Information provided reports:

"There is no asbestos-containing spray-on fireproofing on the Plaza or Concourse (Mall)."

"There is approximately 500 linear feet of TSI in the plenum of the Concourse (Mall)."

"Vinyl asbestos floor tiles may...be present in some of the retail stores."

ACM may be present in elevator shafts, if any.

# APPENDIX A

# PLAZA and CONCOURSE

There is no sprayed-on asbestos containing fireproofing on the Plaza or Concourse (Mall).

There is approximately 500 lnft of TSI in the plenum of the Concourse (Mall) ceiling.

Vinyl asbestos floor tiles may however be present in some of the retail stores.

THE PORT AUTHORITY OF NY & NJ MEMORANDUM

TO: Joseph Amatuccio, Carla Bonacci, Jerrold Dinkels, Frank DiMartini, Eric Hauser, Louis Menno, Edwin Monteverde, Francis Riccardelli, Nancy Seliga

FROM: John Castaldo

DATE: September 19, 2000

SUBJECT: ASBESTOS POSITIVE LOCATIONS AT THE WORLD TRADE CENTER: UPDATE.

REFERENCE: J. Castaldo to Addressees; Memorandums Dated 5/4/98 and 12/21/99; Same Subject.

COPY: L. Ardizzone, S. Benjamin, I. Chachkes, J. Connors, W. Devlin, M. Finegold, M. Hurley, M. Jakubek, M. Kirshner, T. Lynch, U. Mehta, G. Meyer, R. Muessig, C. Nanninga, A. Reiss, E. Strauss, G. Tabek, P. Taylor, F. Varriano, L. Zucchi, Operations Control Desk, S-4's

Attached please find an update to my initial May, 1998 memorandum wherein the known asbestos locations at the World Trade Center were disclosed. The information provided in this disclosure is a compulation of avaliable bulk sampling and analytical results from both the World Trade and Engineering Departments' data bases.

In compliance with the disclosure requirements of the U.S. Occupational Safety and Health Administration's asbestos standard, I am requesting that this information be distributed to all World Trade Department, Engineering Department, PA Office Space, and Leasing Division property managers, project managers, construction managers, construction inspectors, operations supervisors, security supervisors, facility maintanence supervisors, and leasing agents associated with the allocation of space, and the design and implementation of World Trade Center projects. Additionally, please forward this information to those contractors under your administration. If there are questions as to the presence of asbestos-containing materials at a particular location, or if the scope of demolition and/or renovation work may impact asbestos-containing materials, please contact Art Burton, Assistant Environmental Coordinator, at 435-8364.

Those on the copyline are requested to contact this office for the appropriate response action if asbestos-containing materials may be impacted by work under your jurisdiction. The Port Authority complies with Industrial Code Rule #56 relative to worker certifications, contractor licensing, and work procedures if asbestos is going to be disturbed or impacted. Please contact me at 435-8518 should you have any questions.

John Castaldo
General Manager,
*Base Building Services*

**Asbestos-Containing Surfacing And/Or Thermal System Insulation Materials Located In Four And Five World Trade Center**

There is no asbestos-containing sprayed-on fireproofing in Four and Five World Trade Center.
A cementitious patch has been identified on a beam in the south wing of the southwest portion on the 5th floor in 5 WTC.
Thermal system insulation is present in the form of pipe saddles.

**Asbestos-Containing Surfacing And/Or Thermal System Insulation Materials Located On The Concourse**

There is no asbestos-containing sprayed-on fireproofing in the plenum of the Concourse.
Thermal system insulation material is present.
ACM

**Asbestos-Containing Surfacing And/Or Thermal System Insulation Materials Located On The B1 Level And The Truckdock**

Asbestos-containing sprayed-on fireproofing and thermal system insulation material is present.

**Miscellaneous Asbestos-Containing Materials At The World Trade Center**

Base building flooring throughout the facility is vinyl asbestos floor tile (VAT).

## Asbestos-Containing Surfacing And Thermal System Insulation Materials Located In Four And Five World Trade Center

There is no asbestos-containing sprayed-on fireproofing in Four and Five World Trade Center.
Thermal system insulation is present in the form of pipe saddles.

## Asbestos-Containing Surfacing And Thermal System Insulation Materials Located On The Concourse

There is no asbestos-containing sprayed-on fireproofing in the plenum of the Concourse.
There is thermal system insulation material present.
- ACM

## Asbestos-Containing Surfacing And Thermal System Insulation Materials Located On The B1 Level And The Truckdock

Asbestos-containing sprayed-on fireproofing and thermal system insulation material is present.

## Miscellaneous Asbestos-Containing Materials At The World Trade Center

Base building flooring throughout the facility is vinyl asbestos floor tile (VAT).

ACBM is located behind the convector units at the following locations:
1 WTC; 77, 79, 88, 101, 103 and 105.
2 WTC; 22, 24, 59, 72, 79, 81, 84, 86 and 87.

**THE PORT AUTHORITY OF NEW YORK & NEW JERSEY**

**MEMORANDUM**

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**TO:** Phil Taylor-Supervising Engineer.

**FROM:** Pete Negron

**DATE:** July 21, 1999

**SUBJECT:** **Elevator Shaft Asbestos Assessment.**

**REFERENCE:** **Attached E-Mail**

**COPY TO:** J. Amatuccio, D. Bobbitt, A. Burton, J. Castaldo, F. Riccardelli, L. Zucchi.

During the week of July 21, 1999, I inspected the elevator shafts to assess the condition of the fireproofing on the steel members.

The attached report includes the shaft number, floor and condition of fireproofing: intact or delaminated, and recommended action.

Floors not listed were inspected and found to be acceptable in that the fireproofing was intact.

In summary, of the 22 shafts inspected, shafts, which require full-scale abatement, are shafts 22/23A, 10B and 48B.

If you require further information regarding this report please contact me at 1.212.435.8364.

Pete Negron
Associate Environmental Analyst
Operations & Maintenance Management
World Trade Center

Attachment

# WORLD TRADE CENTER
## ELEVATOR SHAFTS ASBESTOS ASSESSMENT

| FLOOR | SHAFT | FIREPROOFING INTACT | DELAMINATION | QUANTITY DELAMINATED | RECOMMENDATION |
|---|---|---|---|---|---|
| 25 | 1A | NO | YES | 24 S.F. | SEAL EDGES |
| 26 | 1A | NO | YES | 12 S.F. | SEAL EDGES |
| 27 | 1A | NO | YES | 30 S.F. | SEAL EDGES |
| 28 | 1A | NO | YES | 12 S.F. | SEAL EDGES |
| 29 | 1A | NO | YES | 48 S.F. | SEAL EDGES |
| SPRAY-ON MATERIAL | | | | | |

| FLOOR | SHAFT | FIREPROOFING INTACT | DELAMINATION | QUANTITY DELAMINATED | RECOMMENDATION |
|---|---|---|---|---|---|
| 9 | 2A | NO | YES | 24 S.F. | SEAL EDGES |
| 27 | 2A | NO | YES | 4 S.F. | SEAL EDGES |
| 28 | 2A | NO | YES | 4 S.F. | SEAL EDGES |
| 29 | 2A | NO | YES | 4 S.F. | SEAL EDGES |
| 30 | 2A | NO | YES | 24 S.F. | SEAL EDGES |
| 31 | 2A | NO | YES | 24 S.F. | SEAL EDGES |
| 34 | 2A | NO | YES | 36 S.F. | SEAL EDGES |
| 38 | 2A | NO | YES | 6 S.F. | SEAL EDGES |
| SPRAY-ON MATERIAL | | | | | |

2A

| FLOOR | SHAFT | FIREPROOFING INTACT | DELAMINATION | QUANTITY DELAMINATED | RECOMMENDATION |
|---|---|---|---|---|---|
| 310 | 3A | NO | YES | 72 S.F. | SEAL EDGES |
| 5 | 3A | NO | YES | 34 S.F. | SEAL EDGES |
| 8 | 3A | NO | YES | 48 S.F. | SEAL EDGES |
| 9 | 3A | NO | YES | 48 S.F. | SEAL EDGES |
| 16 | 3A | NO | YES | 30 S.F. | SEAL EDGES |
| 17 | 3A | NO | YES | 48 S.F. | SEAL EDGES |
| 18 | 3A | NO | YES | 48 S.F. | SEAL EDGES |
| 19 | 3A | NO | YES | 72 S.F. | SEAL EDGES |
| 28 | 3A | NO | YES | 48 S.F. | SEAL EDGES |
| 34 | 3A | NO | YES | 72 S.F. | SEAL EDGES |
| 40 | 3A | NO | YES | 6 S.F. | SEAL EDGES |
| SPRAYED-ON MATERIAL | | | | | |

| FLOOR | SHAFT | FIREPROOFING INTACT | DELAMINATION | QUANTITY DELAMINATED | RECOMMENDATION |
|---|---|---|---|---|---|
| ALL | 4A | YES | NO | NONR | NONE |
| CEMENTITIOUS MATERIAL | | | | | |

| FLOOR | SHAFT | FIREPROOFING INTACT | DELAMINATION | QUANTITY DELAMINATED | RECOMMENDATION |
|---|---|---|---|---|---|
| ALL | 5A | YES | NO | NONE | NONE |
| ALL | 48A | YES | NO | NONE | NONE |
| CEMENTITIOS MATERIAL | | | | | |

Note: Delamination is fireproofing whether sprayed or troweled no longer present on the steel members.

1

## WORLD TRADE CENTER
## ELEVATOR SHAFTS ASBESTOS ASSESSMENT

| FLOOR | SHAFT | FIREPROOFING INTACT | DELAMINATION | QUANTITY DELAMINATED | RECOMMENDATION |
|---|---|---|---|---|---|
| 22 | 8A | NO | YES | 72 S.F. | SEAL EDGES |
| 33 | 8A | NO | YES | 48 S.F. | SEAL EDGES |
| 36 | 8A | NO | YES | 4 S.F. | SEAL EDGES |
| 38 | 8A | NO | YES | 48 S.F. | SEAL EDGES |
| 39 | 8A | NO | YES | 48 S.F. | SEAL EDGES |
| SPRAY-ON MATERIAL | | | | | |

| FLOOR | SHAFT | FIREPROOFING INTACT | DELAMINATION | QUANTITY DELAMINATED | RECOMMENDATION |
|---|---|---|---|---|---|
| 7 | 9A | NO | YES | 2 S.F. | SEAL EDGES |
| 13 | 9A | NO | YES | 2 S.F. | SEAL EDGES |
| 24 | 9A | NO | YES | 3 S.F. | SEAL EDGES |
| 31 | 9A | NO | YES | 4 S.F. | SEAL EDGES |
| 34 | 9A | NO | YES | 6 S.F. | SEAL EDGES |
| 36 | 9A | NO | YES | 6 S.F. | SEAL EDGES |
| 39 | 9A | NO | YES | 48 S.F. | SEAL EDGES |
| 41 | 9A | NO | YES | 48 S.F. | SEAL EDGES |
| 43 | 9A | NO | YES | 48 S.F. | SEAL EDGES |
| SPRAYED-ON MATERIAL | | | | | |

| FLOOR | SHAFT | FIREPROOFING INTACT | DELAMINATION | QUANTITY DELAMINATED | RECOMMENDATION |
|---|---|---|---|---|---|
| 9 | 16A | NO | YES | 24 S.F. | SEAL EDGES |
| 25 | 16A | NO | YES | 18 S.F. | SEAL EDGES |
| 26 | 16A | NO | YES | 28 S.F. | SEAL EDGES |
| 27 | 16A | NO | YES | 48 S.F. | SEAL EDGES |
| 28 | 16A | NO | YES | 24 S.F. | SEAL EDGES |
| CEMENTITIUOS MATERIAL | | | | | |

| FLOORS | SHAFT | FIREPROOFING INTACT | DELAMINATION | QUANTITY DELAMINATED | RECOMMENDATION |
|---|---|---|---|---|---|
| ALL | 17A | YES | NO | NO | NONE |

| FLOORS | SHAFT | FIREPROOFING INTACT | DELAMINATION | QUANTITY DELAMINATED | RECOMMENDATION |
|---|---|---|---|---|---|
| ALL | 18A | X | NO | NONE | NONE |

Note: Delamination is fireproofing whether sprayed or troweled no longer present on the steel members

WORLD TRADE CENTER
ELEVATOR SHAFTS ASBESTOS ASSESSMENT

| FLOOR | SHAFT 1 WTC | FIREPROOFING INTACT | DELAMINATION | QUANTITY DELAMINATED | RECOMMENDATION |
|---|---|---|---|---|---|
| 8 | 19A | NO | YES | 16 S.F. | SEAL EDGES |
| 10 | 19A | NO | YES | 24 S.F. | SEAL EDGES |
| 11 | 19A | NO | YES | 24 S.F. | SEAL EDGES |
| 19 | 19A | NO | YES | 48 S.F. | SEAL EDGES |
| 25 | 19A | NO | YES | 48 S.F. | SEAL EDGES |
| 26 | 19A | NO | YES | 48 S.F. | SEAL EDGES |
| 28 | 19A | NO | YES | 24 S.F. | SEAL EDGES |
| 30 | 19A | NO | YES | 24 S.F. | SEAL EDGES |
| 32 | 19A | NO | YES | 2 S.F. | SEAL EDGES |
| CEMENTITIOUS MATERIAL | | | | | |

| FLOOR | SHAFT | FIREPROOFING INTACT | DELAMINATION | QUANTITY DELAMINATED | RECOMMENDATION |
|---|---|---|---|---|---|
| 8 | 20A | NO | YES | 12 S.F. | SEAL EDGES |
| 10 | 20A | NO | YES | 3 S.F. | SEAL EDGES |
| 22 | 20A | NO | YES | 3 S.F. | SEAL EDGES |
| 23 | 20A | NO | YES | 3 S.F. | SEAL EDGES |
| 25 | 20A | NO | YES | 36 S.F. | SEAL EDGES |
| 26 | 20A | NO | YES | 34 S.F | SEAL EDGES |
| 27 | 20A | NO | YES | 26 S.F. | SEAL EDGES |
| 28 | 20A | NO | YES | 30 S.F. | SEAL EDGES |
| 29 | 20A | NO | YES | 28 S.F. | SEAL EDGES |
| SPRAYED-ON MATERIAL | | | | | |

| FLOOR | SHAFT | FIREPROOFING INTACT | DELAMINATION | QUANTITY DELAMINATED | RECOMMENDATION |
|---|---|---|---|---|---|
| 310 | 21A | NO | YES | 24 S.F. | SEAL EDGES |
| 2 | 21A | NO | YES | 24 S.F | SEAL EDGES |
| 3 | 21A | NO | YES | 24 S F. | SEAL EDGES |
| 9 | 21A | NO | YES | 24 S.F. | SEAL EDGES |
| 23 | 21A | NO | YES | 24 S F. | SEAL EDGES |
| 29 | 21A | NO | YES | 48 S F. | SEAL EDGES |
| 32 | 21A | NO | YES | 6 S.F. | SEAL EDGES |
| SPRAYED-ON MATERIAL | | | | | |

Note: Delamination is fireproofing whether sprayed or troweled no longer present on the steel members.

## WORLD TRADE CENTER
## ELEVATOR SHAFTS ASBESTOS ASSESSMENT

| FLOOR | SHAFT | FIREPROOFING INTACT | DELAMINATION | QUANTITY DELAMINATED | RECOMMENDATION |
|---|---|---|---|---|---|
| 3 | 22A | NO | YES | 4 S.F. | SEAL EDGES |
| 4 | 22A | NO | YES | 4 S.F. | SEAL EDGES |
| 5 | 22A | NO | YES | 4 S.F. | SEAL EDGES |
| 6 | 22A | NO | YES | 4 S.F. | SEAL EDGES |
| 7 | 22A | NO | YES | 4 S.F. | SEAL EDGES |
| 8 | 22A | NO | YES | 4 S.F. | SEAL EDGES |
| 9 | 22A | NO | YES | 4 S.F. | SEAL EDGES |
| 10 | 22A | NO | YES | 4 S.F. | SEAL EDGES |
| 11 | 22A | NO | YES | 4 S.F. | SEAL EDGES |
| 12 | 22A | NO | YES | 4 S.F. | SEAL EDGES |
| 13 | 22A | NO | YES | 4 S.F. | SEAL EDGES |
| 14 | 22A | NO | YES | 6 S.F. | SEAL EDGES |
| 15 | 22A | NO | YES | 4 S.F. | SEAL EDGES |
| 16 | 22A | NO | YES | 12 S.F. | SEAL EDGES |
| 18 | 22A | NO | YES | 6 S.F. | SEAL EDGES |
| 19 | 22A | NO | YES | 6 S.F. | SEAL EDGES |
| 20 | 22A | NO | YES | 6 S.F. | SEAL EDGES |
| 21 | 22A | NO | YES | 6 S.F. | SEAL EDGES |
| 22 | 22A | NO | YES | 6 S.F. | SEAL EDGES |
| 23 | 22A | NO | YES | 6 S.F. | SEAL EDGES |
| 24 | 22A | NO | YES | 6 S.F. | SEAL EDGES |
| 25 | 22A | NO | YES | 6 S.F. | SEAL EDGES |
| 26 | 22A | NO | YES | 8 S.F. | SEAL EDGES |
| 27 | 22A | NO | YES | 6 S.F. | SEAL EDGES |
| 28 | 22A | NO | YES | 48 S.F. | SEAL EDGES |
| 29 | 22A | NO | YES | 6 S.F. | SEAL EDGES |
| 30 | 22A | NO | YES | 6 S.F. | SEAL EDGES |
| 31 | 22A | NO | YES | 6 S.F. | SEAL EDGES |
| 32 | 22A | NO | YES | 6 S.F. | SEAL EDGES |
| 33 | 22A | NO | YES | 6 S.F. | SEAL EDGES |
| 34 | 22A | NO | YES | 6 S.F. | SEAL EDGES |
| 35 | 22A | NO | YES | 4 S.F. | SEAL EDGES |
| 36 | 22A | NO | YES | 8 S.F. | SEAL EDGES |
| 37 | 22A | NO | YES | 6 S.F. | SEAL EDGES |
| 38 | 22A | NO | YES | 6 S.F. | SEAL EDGES |
| 39 | 22A | NO | YES | 24 S.F. | SEAL EDGES |
| 40 | 22A | NO | YES | 8 S.F. | SEAL EDGES |
| 41 | 22A | NO | YES | 8 S.F. | SEAL EDGES |
| 42 | 22A | NO | YES | 8 S.F. | SEAL EDGES |
| 43 | 22A | NO | YES | 8 S.F. | SEAL EDGES |
| 44 | 22A | NO | YES | 8 S.F. | SEAL EDGES |
| 45 | 22A | NO | YES | 8 S.F. | SEAL EDGES |
| 46 | 22A | NO | YES | 8 S.F. | SEAL EDGES |
| 47 | 22A | NO | YES | 8 S.F. | SEAL EDGES |
| 48 | 22A | NO | YES | 2 S.F. | SEAL EDGES |
| 49 | 22A | NO | YES | 6 S.F. | SEAL EDGES |
| 50 | 22A | NO | YES | 2 S.F. | SEAL EDGES |
| 51 | 22A | NO | YES | 4 S.F. | SEAL EDGES |
| 52 | 22A | NO | YES | 4 S.F. | SEAL EDGES |
| 54 | 22A | NO | YES | 4 S.F. | SEAL EDGES |
| 55 | 22A | NO | YES | 2 S.F. | SEAL EDGES |
| 56 | 22A | NO | YES | 48 S.F. | SEAL EDGES |
| 58 | 22A | NO | YES | 3 S.F. | SEAL EDGES |
| 62 | 22A | NO | YES | 2 S.F. | SEAL EDGES |
| 64 | 22A | NO | YES | 2 S.F. | SEAL EDGES |
| 67 | 22A | NO | YES | 2 S.F. | SEAL EDGES |

Note. Delamination is fireproofing whether sprayed or troweled no longer present on the steel members.

## WORLD TRADE CENTER
## ELEVATOR SHAFTS ASBESTOS ASSESSMENT

| FLOOR | SHAFT | FIREPROOFING INTACT | DELAMINATION | QUANTITY DELAMINATED | RECOMMENDATION |
|---|---|---|---|---|---|
| 70 | 22A | NO | YES | 3 S.F. | SEAL EDGES |
| 73 | 22A | NO | YES | 2 S.F. | SEAL EDGES |
| 78 | 22A | NO | YES | 2 S.F. | SEAL EDGES |
| SPRAYED-ON MATERIAL | | | ABATEMENT OF SHAFT IS RECOMMENDED | | |

| FLOOR | SHAFT | FIREPROOFING INTACT | DELAMINATION | QUANTITY DELAMINATED | RECOMMENDATION |
|---|---|---|---|---|---|
| 16 | 23A | NO | YES | 2 S.F. | SEAL EDGES |
| 17 | 23A | NO | YES | 2 S.F. | SEAL EDGES |
| 18 | 23A | NO | YES | 2 S.F. | SEAL EDGES |
| 19 | 23A | NO | YES | 2 S.F. | SEAL EDGES |
| 20 | 23A | NO | YES | 2 S.F. | SEAL EDGES |
| 21 | 23A | NO | YES | 2 S.F. | SEAL EDGES |
| 22 | 23A | NO | YES | 2 S.F. | SEAL EDGES |
| 23 | 23A | NO | YES | 2 S.F. | SEAL EDGES |
| 24 | 23A | NO | YES | 2 S.F. | SEAL EDGES |
| 25 | 23A | NO | YES | 2 S.F. | SEAL EDGES |
| 26 | 23A | NO | YES | 2 S.F. | SEAL EDGES |
| 27 | 23A | NO | YES | 2 S.F. | SEAL EDGES |
| 28 | 23A | NO | YES | 2 S.F. | SEAL EDGES |
| 29 | 23A | NO | YES | 2 S.F. | SEAL EDGES |
| 30 | 23A | NO | YES | 2 S.F. | SEAL EDGES |
| 31 | 23A | NO | YES | 2 S.F. | SEAL EDGES |
| 32 | 23A | NO | YES | 2 S.F. | SEAL EDGES |
| 33 | 23A | NO | YES | 2 S.F. | SEAL EDGES |
| 34 | 23A | NO | YES | 2 S.F. | SEAL EDGES |
| 35 | 23A | NO | YES | 2 S.F. | SEAL EDGES |
| 36 | 23A | NO | YES | 2 S.F. | SEAL EDGES |
| 37 | 23A | NO | YES | 2 S.F. | SEAL EDGES |
| 73 | 23A | NO | YES | 1 S.F. | SEAL EDGES |
| SPRAYED-ON MATERIAL | | | ABATEMENT OF SHAFT IS RECOMMENDED | | |

Note: Delamination is fireproofing whether sprayed or troweled no longer present on the steel members.

WORLD TRADE CENTER
ELEVATOR SHAFTS ASBESTOS ASSESSMENT

| FLOOR | SHAFT | FIREPROOFING INTACT | DELAMINATION | QUANTITY DELAMINATED | RECOMMENDATION |
|---|---|---|---|---|---|
| 3 | 10B | NO | YES | 6 S.F. | SEAL EDGES |
| 4 | 10B | NO | YES | 6 S.F. | SEAL EDGES |
| 7 | 10B | NO | YES | 8 S.F. | SEAL EDGES |
| 12 | 10B | NO | YES | 1 S.F. | SEAL EDGES |
| 15 | 10B | NO | YES | 2 S.F. | SEAL EDGES |
| 19 | 10B | NO | YES | 20 S.F | SEAL EDGES |
| 20 | 10B | NO | YES | 15 S.F. | SEAL EDGES |
| 21 | 10B | NO | YES | 26 S.F. | SEAL EDGES |
| 22 | 10B | NO | YES | 28 S.F. | SEAL EDGES |
| 23 | 10B | NO | YES | 15 S.F. | SEAL EDGES |
| 25 | 10B | NO | YES | 48 S.F. | SEAL EDGES |
| 28 | 10B | NO | YES | 4 S.F. | SEAL EDGES |
| 29 | 10B | NO | YES | 2 S.F. | SEAL EDGES |
| 31 | 10B | NO | YES | 2 S.F. | SEAL EDGES |
| 34 | 10B | NO | YES | 48 S.F. | SEAL EDGES |
| 35 | 10B | NO | YES | 48 S.F. | SEAL EDGES |
| 36 | 10B | NO | YES | 34 S.F. | SEAL EDGES |
| 37 | 10B | NO | YES | 24 S.F. | SEAL EDGES |
| 39 | 10B | NO | YES | 48 S.F. | SEAL EDGES |
| 40 | 10B | NO | YES | 48 S.F. | SEAL EDGES |

SPRAYED-ON MATERIAL — ABATEMENT OF SHAFT IS RECOMMENDED

| FLOOR | SHAFT | FIREPROOFING INTACT | DELAMINATION | QUANTITY DELAMINATED | RECOMMENDATION |
|---|---|---|---|---|---|
| 5 | 11B | NO | YES | 1 S.F. | SEAL EDGES |
| 12 | 11B | NO | YES | 1 S.F. | SEAL EDGES |
| 19 | 11B | NO | YES | 2 S.F. | SEAL EDGES |
| 26 | 11B | NO | YES | 2 S.F. | SEAL EDGES |
| 31 | 11B | NO | YES | 48 S.F. | SEAL EDGES |
| 33 | 11B | NO | YES | 2 S.F. | SEAL EDGES |
| 40 | 11B | NO | YES | 2 S.F. | SEAL EDGES |

SPRAYED-ON MATERIAL

| FLOOR | SHAFT | FIREPROOFING INTACT | DELAMINATION | QUANTITY DELAMINATED | RECOMMENDATION |
|---|---|---|---|---|---|
| ALL | 5B | YES | NO | NONE | NONE |
| ALL | 48B* | NO | YES | *** | ABATEMENT |

48B SHAFT-SPRAYED-ON FIREPROOFING
*** 1' - FOOT STRIP ALONG LENGTH OF COLUMN MISSING

Note: Delamination is fireproofing whether sprayed or troweled no longer present on the steel members

WORLD TRADE CENTER
ELEVATOR SHAFTS ASBESTOS ASSESSMENT

| FLOOR | SHAFT | FIREPROOFING INTACT | DELAMINATION | QUANTITY DELAMINATED | RECOMMENDATION |
|---|---|---|---|---|---|
| 3 | 14B | NO | YES | 2 S.F. | SEAL EDGES |
| 4 | 14B | NO | YES | 2 S.F. | SEAL EDGES |
| 8 | 14B | NO | YES | 1 S.F. | SEAL EDGES |
| 9 | 14B | NO | YES | 1 S.F. | SEAL EDGES |
| 10 | 14B | NO | YES | 1 S.F. | SEAL EDGES |
| 11 | 14B | NO | YES | 1 S.F. | SEAL EDGES |
| 12 | 14B | NO | YES | 1 S.F. | SEAL EDGES |
| 13 | 14B | NO | YES | 1 S.F. | SEAL EDGES |
| 14 | 14B | NO | YES | 1 S.F. | SEAL EDGES |
| 15 | 14B | NO | YES | 1 S.F. | SEAL EDGES |
| 16 | 14B | NO | YES | 1 S.F. | SEAL EDGES |
| 17 | 14B | NO | YES | 1 S.F. | SEAL EDGES |
| 18 | 14B | NO | YES | 1 S.F. | SEAL EDGES |
| 23 | 14B | NO | YES | 1 S.F. | SEAL EDGES |
| 24 | 14B | NO | YES | 1 S.F. | SEAL EDGES |
| 25 | 14B | NO | YES | 1 S.F. | SEAL EDGES |
| 26 | 14B | NO | YES | 1 S.F. | SEAL EDGES |
| 27 | 14B | NO | YES | 1 S.F. | SEAL EDGES |
| 28 | 14B | NO | YES | 1 S.F. | SEAL EDGES |

SPRAYED-ON MATERIAL

| FLOOR | SHAFT | FIREPROOFING INTACT | DELAMINATION | QUANTITY DELAMINATED | RECOMMENDATION |
|---|---|---|---|---|---|
| 310 | 15B | NO | YES | 4 S.F | SEAL EDGES |
| 3 | 15B | NO | YES | 2 S.F. | SEAL EDGES |
| 4 | 15B | NO | YES | 4 S.F. | SEAL EDGES |
| 22 | 15B | NO | YES | 1 S.F. | SEAL EDGES |
| 25 | 15B | NO | YES | 8 S.F. | SEAL EDGES |

SPRAYED-ON MATERIAL

Note: Delamination is fireproofing whether sprayed or troweled no longer present on the steel members.

THE PORT AUTHORITY OF NY & NJ

TWO WORLD TRADE CENTER, 37TH FLOOR
NEW YORK, NY 10048

(212) 435-7000
(201) 961-6600

October 18, 2000

R. W. Crandlemere & Associates
549 Columbian Street
Suite 305
Weymounth, MA 02190

**RE: ASBESTOS DUE DILIGENCE: INFORMATION REQUEST.**

Dear Mr. Crandlemere:

Please find attached the responses to your October 12, 2000 fax wherein you requested that the available asbestos information be broken down into seven areas. In addition, responses to your general information requests are also provided.

Request: **Total remaining and total removed ACM, broken down by material types and locations, within the designated areas as much as practical (e.g. by floor number or other description; such as within pipe chase or the elevator shafts).**

The attached breakdowns for 1 WTC, 2 WTC, 4 WTC, 5 WTC, MERs, Subgrade, and Concourse disclose the estimated amounts of asbestos-containing sprayed-on fireproofing and thermal system insulation material present. Drawings identifying these asbestos locations by sample number are on file in my office. Attachments disclosing the amounts of vinyl asbestos floor tiles present as of April, 2000 are also included. These estimates were provided by the Port Authority's Engineering Department, Asbestos Litigation Task Force, and the World Trade Department.

Asbestos-containing roofing material was removed from the MER set-backs in 1 and 2 World Trade Center, and the roofs of 4 and 5 World Trade Center. The roofs of 1 and 2 World Trade Center were not sampled.

**Request:** **The abatement costs for work performed and anticipated future abatement costs for each type of remaining known ACM.**

From 1986 to 1999, a total thirty one (31) contracts were bid, and a total of $58.2 million dollars was spent in abatement projects. The Engineering Department estimates the cost for vinyl asbestos floor tile removal to be between $5 - $6 per square foot, sprayed-on removal to be between $20 - $25 per square foot, and thermal system insulation to be $15 per linear foot (outer diameter dependant).

As of September, 2000, a total of 2,184,038 million square feet of sprayed-on fireproofing, and 3,500,000 million square feet of vinyl asbestos floor tile was removed. According to PA records, a total of seven million square feet of vinyl asbestos floor tiles were installed in the World Trade Center.

**Request:** **Materials determined not to be ACM (e.g. spline ceilings, hung ceilings, wallboard, wallboard joint compound, etc., as well as areas of sprayed-on fireproofing determined not to be ACM).**

Sampling of the building materials noted above did not disclose the presence of asbestos.

**Request:** **Any materials that are assumed to be ACM (such as fire doors) with an estimate, if possible, of the amounts of each material.**

Our presumption as to the types of asbestos-containing building materials within the World Trade Center did not include fire doors. Based upon sample data, asbestos containing building materials appear to be limited to sprayed-on fireproofing, thermal system insulation, and floor tiles and mastic.

**Request:** **Asbestos litigation status.**

Your information request has been forwarded to the Port Authority's Law Department. We will notify you accordingly.

The following information is in response to your fax dated Wednesday, October 18th.

**Request: PCB-containing Hydraulic Fluid.**

The hydraulic fluid (hydraulic oil # 32 AW) leaking from elevator FE-5, located on the B4 Level of 1 World Trade Center does not contain PCB. I have a copy of the Material Safety Data Sheet from the distributor; Consumers Oil, 515 South First Avenue, Mt. Vernon, N.Y.. Hydraulic elevator FE - 6 in 2 World Trade Center also uses hydraulic oil # 32 AW.

Relating to the trash compactors, please note that the hydraulic fluid is ordered through the Port Authority Stockroom from an approved list of chemical products established by the Inspection & Safety Division. The hydraulic fluid used for the trash compactors is either mineral or vegetable based. Both are non-PCB products.

**Request: Additional Information Regarding Radio-Frequency Testing.**

I do not have a copy of, nor do I have knowledge of the March ,1999 report prepared by Denny & Associates recommending additional RF exposure monitoring. All radio-frequency documents are available for your review in the Document Room.

Please contact me at (212) 435-8507 should you have any questions or require additional information.

Phil Taylor
World Trade Operations &
Maintenance Management

Cc: J. Connors, A. Reiss, L. Zucchi

# PLAZA and CONCOURSE

There is no sprayed-on asbestos containing fireproofing on the Plaza or Concourse (Mall).

There is approximately 500 lnft of TSI in the plenum of the Concourse (Mall) ceiling.

Vinyl asbestos floor tiles may however be present in some of the retail stores.

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